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Civil District Court  
Parish of Orleans  
State of Louisiana

No. 96-8461

Division "K"

-----X  
Gloria Scott, Et Al  
versus  
The American Tobacco Company, Inc.,  
Et Al  
-----X

Videotaped deposition of  
A. Clifton Lilly  
taken on  
October 17, 2000  
951 East Byrd Street  
Richmond, Virginia 23219

STONE-RIGMAN  
**COPY**

Accu-Tech Court Reporters  
225-665-1270 Fax 225-665-9059 Cell 225-315-1726  
E-mail accutech@atel.net  
Reported by: Betty C. Godso, RPR, CCR #87189

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A P P E A R A N C E  
For the Plaintiffs, Gloria Scott, Et al  
Robert R. Hopper, Esq.  
Zimmerman Reed  
901 North Third Street  
Minneapolis, Minnesota 55401  
612 341-0400

Thomas D. Penfield, Esq.  
Casey, Gerry, Reed, Schenk  
110 Laurel Street  
San Diego, CA 921-1-1486  
619 238-1811

Jack M. Bailey, Jr., Esq.  
2790 Fairfield Avenue  
Shreveport, LA 71104  
318 222-5200

For the Defendants, Philip Morris  
James P. Muehlberger, Esq.  
Shook, Hardy & Bacon  
One Kansas City Place  
1200 Main Street  
Kansas City, Missouri 64105-2118  
816 474-6550

Charles F. Gay, Jr. (Not present)  
Adams and Reese, LLP  
4500 One Shell Square  
New Orleans, LA 70139  
504 585-0295

For the Defendants, R.J. Reynolds  
Dorothy H. Wimberly, Attorney (not present)  
Stone, Pigman, Walther, Wittmann & Hutchinson  
546 Carondelet Street  
New Orleans, LA 70130-3588  
504 581-3200

Evidence Management, LLC  
431 Gravier Street, Ste. 200  
New Orleans, LA 70130  
504 595-5000

Sally A. Leys, Paralegal  
Kimberly Harlowe, Paralegal  
Hunton and Williams  
Riverfront Plaza, East Tower  
Richmond, VA 23219

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08:58:08

1           Tuesday, October 17, 2000.

2           \* \* \*

3           A. Clifton Lilly,  
4       having been produced and first duly  
5       sworn testified as follows:

6           EXAMINATION

7       BY MR. HOPPER:

8       Q.     Good morning, Dr. Lilly.

9       A.     Good morning.

10      Q.     I'm Randy Hopper and I'll be  
11     cross-examining you today --

12      A.     Good to see you.

13      Q.     -- on behalf of the  
14     plaintiffs. I know that you've sat  
15     through quite a few depositions in the  
16     past in various litigation.

17           We have a few housekeeping  
18     matters, as your attorney knows, that  
19     we have to take care of initially, so  
20     if you will bear with counsel and me  
21     for just a moment, we will try to  
22     dispense with those as soon as we can.

23      A.     Okay.

24      Q.     The first thing we want to do  
25     is get the deposition notice and the

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09:11:40 1 C.V. and report from Dr. Lilly on the  
09:11:44 2 record.

3 (Whereupon, the document was  
4 marked as Exhibit Number One for  
5 Identification.)

6 Madame Court Reporter, if  
7 you'll enter the notice and the report,  
8 and I'm going to need that report back.

9 I think we need to mark each  
10 of these individually, so there is no  
11 confusion. So, I'm marking the CMO-2  
12 as Exhibit Number Two.

13 (Whereupon, the document was  
14 marked Exhibit Number Two for  
15 Identification.)

16 And I'm marking Dr. Lilly's  
17 submission, his expert witness report  
18 as Exhibit Number Three.

19 And for the record, that also  
20 includes the statement of his opinions  
21 as well as the citations of authority  
22 and documents upon which he relies for  
23 his opinions.

24 (Whereupon, the document was  
25 marked as Exhibit Number Three for

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09:14:17 1 Identification.)  
09:14:18 2 I see that I'm supposed to  
09:14:20 3 mark the reliance documents separately,  
09:14:25 4 and I'm not in order here.  
09:14:33 5 Do you have Exhibit Number  
09:14:34 6 Four there?  
09:14:34 7 (Whereupon, the document was  
09:14:34 8 marked as Exhibit Number Four for  
09:14:57 9 Identification.)  
09:14:57 10 BY MR. HOPPER:  
09:14:58 11 Q. I assume, Dr. Lilly, that you  
09:15:01 12 didn't bring with you any fee  
09:15:04 13 statements or time records allocated to  
09:15:07 14 the time you spent as an expert witness  
09:15:10 15 in this litigation?  
09:15:12 16 A. No, I did not.  
09:15:14 17 Q. Or any kind of records or  
09:15:16 18 anything at all pertinent to your  
09:15:16 19 services as an expert witness in this  
09:15:16 20 litigation?  
09:15:22 21 A. No, sir.  
09:15:22 22 MR. MUEHLBERGER: We have  
09:15:25 23 the reliance documents if you  
09:15:25 24 need copies.  
09:15:27 25 MR. HOPPER: You are talking

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09:15:28 1 about for his opinion.

09:15:31 2 MR. MUEHLBERGER: Yes, sir.

09:15:32 3 MR. HOPPER: I have those. I

09:15:35 4 just marked those as Exhibit Number

09:15:37 5 4, but I'm talking about any fee

09:15:43 6 statements or anything that

09:15:43 7 qualifies as pay, the compensation

09:15:43 8 that you're receiving pertinent to

09:15:45 9 this litigation.

09:15:45 10 THE WITNESS: I'm receiving no

09:15:47 11 compensation other than my salary

09:15:49 12 at Philip Morris.

09:15:49 13 MR. HOPPER: I would like to

09:16:09 14 enter an objection on behalf of the

09:16:09 15 plaintiffs and enter into the

09:16:10 16 record that we reserve the right to

09:16:10 17 reopen the deposition at some time

09:16:10 18 if such material ever is provided,

09:16:10 19 or should we need to go into that

09:16:10 20 area.

09:16:11 21 I think that is all with

09:16:18 22 respect to those matters related to

09:16:25 23 the witness and the deposition.

09:16:25 24 We do have several

09:16:26 25 stipulations that we would like to

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09:16:28 1 have placed on the record and I'm  
09:16:31 2 going to share these with counsel,  
09:16:35 3 as in the last deposition, and if  
09:16:39 4 there are no objections, we will  
09:16:42 5 mark those and enter those into the  
09:16:45 6 record.  
09:16:51 7 (Tendering document.)  
09:17:04 8 MR. HOPPER: There being no  
09:17:05 9 objections from Counsel, we will read  
09:17:08 10 into the record that counsel for both  
09:17:11 11 plaintiffs and defendants consent and  
09:17:14 12 stipulate to the following:  
09:17:16 13 Number One, that the  
09:17:17 14 deposition is being conducted by the  
09:17:20 15 agreement of the parties.  
09:17:21 16 Number Two, any defects with  
09:17:24 17 respect to notice, time or location are  
09:17:28 18 waived.  
09:17:29 19 Number Three, any portion of  
09:17:31 20 the deposition can be used for any  
09:17:32 21 purpose by any party at trial.  
09:17:35 22 Number Four, the deposition  
09:17:39 23 shall be on the record at all times.  
09:17:40 24 Number Five, one defense  
09:17:43 25 attorney may object on behalf of the

09:17:46 1 deponent.

09:17:47 2 Number Six, plaintiffs can

09:17:51 3 utilize up to two attorneys to question

09:17:51 4 the witness as long as questioning is

09:17:54 5 not repetitive.

09:17:54 6 Number Seven, witness may not

09:17:55 7 confer with defense counsel until

09:17:58 8 completion of the deposition.

09:19:30 9 I think that completes the

09:19:32 10 housekeeping portion that we needed to

09:19:32 11 go through.

09:19:38 12 BY MR. HOPPER:

09:19:38 13 Q. Dr. Lilly, you are aware,

09:19:39 14 having sat for several depositions in

09:19:42 15 the past, the procedures most of these

09:19:46 16 depositions tend to follow?

09:19:48 17 A. I think so, yes.

09:19:49 18 Q. Make sure your answers, when a

09:19:52 19 question is asked for a yes or a no

09:19:55 20 that you give an audible yes or a no

09:20:01 21 and not just shake your head, or

09:20:03 22 something like that, so that it helps

09:20:04 23 the court reporter and speeds this

09:20:09 24 along.

09:20:09 25 Also, I will certainly do my

09:20:09 1 best to give you the time you need to  
09:20:09 2 complete the answers to the questions  
09:20:10 3 that I ask, and certainly, if you will  
09:20:14 4 extend that courtesy to me, so once  
09:20:18 5 again the court reporter can understand  
09:20:21 6 the question and the answer.

09:20:25 7 I'm sure there may be times  
09:20:29 8 when we may cross each other and let's  
09:20:32 9 just step back and give each other room  
09:20:36 10 to do what we need to do.

09:20:38 11 A. Okay.

09:20:39 12 Q. And then you understand that  
09:20:41 13 you're under oath, that this is also  
09:20:41 14 proceeding not only as a fact  
09:20:42 15 deposition but as a trial deposition,  
09:20:45 16 and your answers are being provided to  
09:20:47 17 the Jury as you speak today?

09:20:41 18 A. Yes.

09:20:41 19 Q. Is that clear?

09:20:42 20 A. Yes.

09:20:45 21 Q. To begin with, what did you  
09:20:47 22 review in preparation for the  
09:20:50 23 deposition today?

09:21:04 24 A. I met with my attorney  
09:21:04 25 yesterday for an hour in late

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in the case of  
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09:21:04 1 afternoon, and that was my only review  
09:21:04 2 or even talking about the deposition.  
09:21:05 3 Q. Did you meet with any other  
09:21:07 4 attorneys other than Mr. Muehlberger  
09:21:12 5 for an hour yesterday?  
09:21:15 6 A. Well, Kevin Webb came in for  
09:21:20 7 about fifteen minutes at the end of it,  
09:21:54 8 but we mostly talked about bicycle  
09:21:54 9 riding.  
09:21:54 10 Q. Is he with the Hunton Williams  
09:21:54 11 firm?  
09:21:54 12 A. Yes, sir.  
09:21:54 13 Q. Did you meet with other  
09:21:54 14 attorneys from Shook Hardy or other law  
09:21:54 15 firms in preparation for the deposition  
09:21:54 16 today?  
09:21:54 17 A. No, sir, I did not.  
09:21:54 18 Q. Have you met with attorneys  
09:21:54 19 from other firms to discuss any of the  
09:21:54 20 documents that you've relied upon or in  
09:21:54 21 preparation of your expert report?  
09:21:54 22 A. No, sir, I have not.  
09:21:54 23 Q. Did you prepare that expert  
09:21:59 24 report on your own?  
09:21:59 25 A. I prepared it on my own.

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09:21:59 1 Obviously, I had to talk to the  
09:21:59 2 attorneys to put it in the form that  
09:22:00 3 you have.  
09:22:01 4 Q. Okay. Did you consult with  
09:22:04 5 any in-house counsel at Philip Morris  
09:22:07 6 or with any of the other tobacco  
09:22:10 7 subsidiaries of Philip Morris in  
09:22:12 8 preparation for this deposition?  
09:22:16 9 A. No, I did not.  
09:22:19 10 Q. Did you consult with any  
09:22:23 11 persons from Philip Morris Management  
09:22:25 12 in preparation for this deposition?  
09:22:28 13 A. No, I did not.  
09:22:39 14 Q. Have you consulted with any  
09:22:39 15 your colleagues in the R & D Department  
09:22:39 16 or other colleagues in Philip Morris in  
09:22:41 17 preparation for the deposition today?  
09:22:44 18 A. No, I have not.  
09:22:49 19 Q. So, other than the hour that  
09:22:49 20 you spent with Mr. Muehlberger, your  
09:22:49 21 attorney, yesterday afternoon, you have  
09:22:49 22 consulted with no one else -- and the  
09:22:50 23 few minutes with Mr. Webb -- you have  
09:22:53 24 consulted with no one else in  
09:22:58 25 preparation for this deposition?

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09:23:10 1 A. That's correct.  
09:23:10 2 Q. Did you review any of your  
09:23:10 3 past depositions where you have sat as  
09:23:10 4 a witness in preparation for this  
09:23:10 5 deposition?  
09:23:10 6 A. No, I did not.  
09:23:11 7 Q. Have you reviewed any other  
09:23:11 8 documents related to those depositions,  
09:23:13 9 any of the exhibits, or anything of  
09:23:13 10 that nature?  
09:23:14 11 A. No, I have not.  
09:23:14 12 Q. So, the answer to the  
09:23:17 13 question, "Did you review any documents  
09:23:18 14 or anything at all in preparation for  
09:23:21 15 the deposition," I take it is no?  
09:23:24 16 A. That is the correct answer,  
09:23:26 17 no, I did not.  
09:23:28 18 Q. Did you go back and review any  
09:23:30 19 of the documents that you have  
09:23:33 20 submitted as part of your Rule 26 or  
09:23:37 21 your expert witness report in  
09:23:41 22 preparation for this service as an  
09:23:44 23 expert witness?  
09:23:45 24 A. No, sir.  
09:23:46 25 Q. When was the last time that

09:23:49 1 you looked at any of those documents?

09:24:00 2 A. Certainly, more than a year.

09:24:04 3 Q. I'm curious to know, are they

09:24:08 4 the same documents that you submitted

09:24:10 5 that you have relied on in other

09:24:15 6 depositions where you have sat as an

09:24:17 7 expert witness?

09:24:21 8 MR. MUEHLBERGER: Object to

09:24:21 9 the form.

09:24:21 10 A. I think they are largely the

09:24:23 11 same. I have had a couple of

09:24:25 12 depositions this summer -- three --

09:24:27 13 but I haven't really looked at the

09:24:33 14 documents.

09:24:33 15 BY MR. HOPPER:

09:24:43 16 Q. Are any of the documents on

09:24:43 17 that list documents that you authored?

09:24:46 18 A. Quite frankly, I don't know. I

09:24:50 19 think there is one on the list where I

09:24:53 20 gave a Board talk, but of course, you

09:24:57 21 get lots of help giving a Board talk,

09:25:00 22 so --

09:25:00 23 Q. Did you select those

09:25:03 24 documents, or did your attorney select

09:25:03 25 those documents?

09:25:10 1 A. I mean, I played a role --  
09:25:10 2 MR. HOPPER: One second, Dr.  
09:25:10 3 Lilly. Your attorney needs to get --  
09:25:13 4 MR. MUEHLBERGER: Object.  
09:25:13 5 A. I certainly played a role in  
09:25:13 6 talking to attorneys about what my  
09:25:16 7 experience was and so forth on things  
09:25:19 8 [REDACTED] like the Board talk, you know, telling  
09:25:21 9 them where it was.  
09:25:24 10 I can't say that I was right  
09:25:26 11 [REDACTED] but in front of that.  
09:25:26 12 BY MR. HOPPER:  
09:25:40 13 Q. It appears from your C.V. tha  
09:25:47 14 [REDACTED] you spent most of your time in Virginii  
09:25:51 15 [REDACTED] and West Virginia and I see that you  
09:25:55 16 [REDACTED] were born in West Virginia; is that  
09:25:57 17 [REDACTED] correct?  
09:25:58 18 A. That's correct, sir.  
09:25:59 19 Q. And most of your life, you  
09:26:01 20 [REDACTED] have lived in Virginia then?  
09:26:04 21 A. I was eight years in  
09:26:05 22 Pittsburg.  
09:26:09 23 Q. When you were at Carnegie  
09:26:12 24 Mellon?  
09:26:12 25 A. When I was at Carnegie Mellon

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09:26:15 1 and Gulf Research in Pittsburg. But  
09:26:15 2 most of my life, I actually spent in  
09:26:39 3 Virginia and West Virginia, that's  
09:26:39 4 correct.

09:26:39 5 Q. And for the record, you  
09:26:39 6 received your Bachelor of Science  
09:26:39 7 degree from Virginia Tech, correct?

09:26:39 8 A. That's correct.

09:26:39 9 Q. In 1957?

09:26:39 10 A. That's correct, yes.

09:26:39 11 Q. And you received your Master  
09:26:39 12 of Science from Carnegie Mellon  
09:26:39 13 University in '65?

09:26:39 14 A. In '63.

09:26:43 15 Q. And you received your Ph.D.  
09:26:43 16 from Virginia Tech in 1989?

09:26:54 17 A. Correct. It was written in  
09:26:54 18 '88. The '65, I went two years beyond  
09:26:54 19 the Master's at Carnegie Mellon.

09:26:54 20 Q. What did you do that extended  
09:26:58 21 it out two years?

09:26:59 22 A. I took further graduate  
09:26:59 23 studies and the qualifying exam to a  
09:27:08 24 Ph.D.

09:27:08 25 Q. You actually received a

09:27:08 1 Master's in '63, and then you did  
09:27:09 2 post-Master work at that point?  
09:27:11 3 A. That's correct.  
09:27:12 4 Q. And then you wrote your  
09:27:14 5 dissertation in '88, did you just say?  
09:27:18 6 A. I wrote it in '88 and the  
09:27:21 7 degree was granted in '89.  
09:27:26 8 Q. And that was in physics?  
09:27:27 9 A. Yes. My Master's and Ph.D.  
09:27:30 10 were in physics.  
09:27:32 11 Q. After you completed your  
09:27:34 12 Master's, I believe, and while you were  
09:27:38 13 actually working on your Master's, you  
09:27:42 14 work for Gulf Research and Development  
09:27:44 15 in Pittsburg?  
09:27:47 16 A. That's correct.  
09:27:47 17 Q. Is that Gulf Oil, the  
09:27:52 18 petroleum company?  
09:27:53 19 A. Yes. That was the research  
09:27:55 20 lab of the Gulf Oil Company.  
09:27:58 21 Q. What attracted you to that  
09:28:05 22 job?  
09:28:05 23 A. Well, I was actually -- got  
09:28:05 24 my Bachelors in petroleum engineering,  
09:28:09 25 which was part of the Earth and

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09:28:12     1     Geological Sciences Department at  
09:28:14     2     Virginia Tech, and I think it was quite  
09:28:18     3     appropriate to think about working for  
09:28:19     4     an oil company at that time, which I  
09:28:22     5     did.

09:28:46     6     Q.     Is there a special focus in  
09:28:48     7     obtaining a Master's and a Ph.D. in  
09:28:55     8     physics on Earth and Geosciences?

09:28:57     9     A.     No, not really.

09:28:59     10     Q.     How is it that you migrated  
09:29:02     11     toward that end of the field of  
09:29:24     12     physical sciences?

09:29:25     13     A.     When I was at Virginia Tech, I  
09:29:25     14     took a couple of graduate courses in  
09:29:25     15     Physics, one in X-ray -- the fraction  
09:29:25     16     theory -- and one in Atomic Physics.

09:29:25     17     When I went to Gulf, most of  
09:29:25     18     what I was doing turned out to be  
09:29:25     19     physics. So, it was pretty natural for  
09:29:27     20     me -- and also my interest -- to go  
09:29:29     21     then further in physics.

09:29:31     22     Q.     From your C.V., I see that you  
09:29:35     23     came to Philip Morris in 1965. How did  
09:29:39     24     you come by that job, did they recruit  
09:29:45     25     you?

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09:29:45 1 A. No, not really.

09:29:45 2 I was being offered an

09:29:47 3 international assignment at Gulf to use

09:29:56 4 infrared detection in cameras to hunt

09:30:02 5 for possible places to drill for oil,

09:30:04 6 and we had three small children, and we

09:30:08 7 were, neither one, my wife nor I, were

09:30:11 8 particularly that interested in going

09:30:15 9 to all the places you find oil in the

09:30:17 10 word, which generally is not big

09:30:22 11 cities. So, I was actually looking for

09:30:25 12 a job and actually had a job offer from

09:30:29 13 the Bendix Corporation in Detroit, and

09:30:35 14 a friend of mine did get recruited,

09:30:46 15 Ralph Bart, who was a chemist because

09:30:46 16 he knew a guy here named Leo Myer that

09:30:52 17 had worked at Gulf, and he came by to

09:30:53 18 say he wasn't interested in the Philip

09:30:57 19 Morris job, that I might be, and that

09:31:00 20 he had given them my name.

09:31:03 21 Q. So, you came to Philip Morris

09:31:05 22 in 1965, and you worked initially as a

09:31:12 23 research scientist from '65 to '67;

09:31:15 24 correct?

09:31:16 25 A. That's correct.

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09:31:17 1 Q. Was your research focused or  
09:31:19 2 was it general research?  
09:31:22 3 A. No, I was in a project. It  
09:31:23 4 was a project to investigate  
09:31:28 5 electrostatic filtration of cigarette  
09:31:34 6 smoke.  
09:31:57 7 Q. Didn't you find it a  
09:31:58 8 significant leap to move from an oil  
09:32:02 9 company that was focused on Earth and  
09:32:09 10 Geoscience research into smoking and  
09:32:10 11 tobacco?  
09:32:11 12 MR. MUEHLBERGER: Object to  
09:32:12 13 the form.  
09:32:12 14 A. Well, I mean, I didn't find  
09:32:16 15 the science so much different. I mean,  
09:32:18 16 the terminology is certainly different  
09:32:21 17 but you have to remember, at Gulf I was  
09:32:25 18 working in building mass spectrometers,  
09:32:31 19 on electron-optics.  
09:32:34 20 I was also doing some  
09:32:35 21 calculations with molecules, and I had  
09:32:39 22 just gone through some of the top  
09:32:41 23 physics courses in the country at  
09:32:45 24 Carnegie Mellon, and to go into worried  
09:32:50 25 about storing charge and insulators and

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09:32:50 1 electric fields was not a big gap  
09:32:53 2 scientifically. Certainly, I knew  
09:32:58 3 nothing about the tobacco industry per  
09:33:00 4 se.

09:33:00 5 Q. I'm interested that you said  
09:33:07 6 that, because what did you know about  
09:33:07 7 the tobacco industry?

09:33:07 8 You say you knew nothing about  
09:33:10 9 it. I take it you meant you knew  
09:33:14 10 nothing about tobacco itself as a plant  
09:33:14 11 when you say that?

09:33:18 12 Can you qualify that answer?  
09:33:18 13 MR. MUEHLBERGER: Object to  
09:33:18 14 the form.

09:33:19 15 A. I certainly knew nothing about  
09:33:22 16 the tobacco plant. I did smoke some  
09:33:26 17 Marlboro cigarettes while at Gulf. And  
09:33:30 18 I knew very little about Philip Morris  
09:33:34 19 until I came down to interview, but I  
09:33:39 20 was impressed with the laboratories and  
09:33:40 21 the people I met and I was impressed  
09:33:45 22 with living in Richmond. Those were  
09:33:49 23 kind of big drivers for my wife and I.

09:33:54 24 Q. How many years had you smoked  
09:33:59 25 before you had come to Philip Morris?

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09:34:00 1 A. I didn't smoke. I played  
09:34:01 2 baseball at VPI or Virginia Tech. So,  
09:34:09 3 I don't think I ever smoked a cigarette  
09:34:09 4 until maybe I was 21 or so.  
09:34:11 5 When I first went to Gulf, I  
09:34:15 6 didn't smoke for two, three, four  
09:34:18 7 years, then I started smoking.  
09:34:20 8 I was smoking Marlboros when I  
09:34:22 9 came to interview at Philip Morris.  
09:34:24 10 Then, as I recall, I didn't smoke after  
09:34:29 11 I started to work there for a while,  
09:34:32 12 maybe a couple of years, and then  
09:34:35 13 gradually I got into smoking again.  
09:34:38 14 Free cigarettes is an incentive, I  
09:34:43 15 think, in that regard.  
09:34:43 16 So, it has been a spotty  
09:34:47 17 smoking record.  
09:34:48 18 Q. When you first began smoking  
09:34:50 19 at age 21, were you aware of any  
09:34:53 20 potential health effects of smoking?  
09:34:57 21 MR. MUEHLBERGER: Object to  
09:34:57 22 the form.  
09:34:58 23 A. I was aware that my  
09:34:59 24 grandmother when I was in high school  
09:35:02 25 said there are two things I don't want

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09:35:03 1 you to do is drink beer and smoke. So,  
09:35:06 2 I was certainly aware of that.  
09:35:06 3 BY MR. HOPPER:  
09:35:08 4 Q. And the two things you did  
09:35:10 5 were?  
09:35:13 6 A. And the two things I did was  
09:35:13 7 first drink beer and then smoke, which  
09:35:15 8 says something about what you tell your  
09:35:20 9 kids, I guess.  
09:35:32 10 Q. I'm going to enter an  
09:35:34 11 objection as to nonresponsive.  
09:35:37 12 Let me ask you again. I  
09:35:39 13 appreciate the background you have  
09:35:42 14 provided to the Jury, but were you  
09:35:43 15 aware of actually any health effects  
09:35:47 16 related to smoking at the time that you  
09:35:50 17 started at age 21?  
09:35:50 18 MR. MUEHLBERGER: Object to  
09:35:53 19 the form.  
09:35:53 20 A. I've got to answer that I  
09:35:54 21 really wasn't when I started. So, I  
09:35:58 22 would say no.  
09:35:58 23 BY MR. HOPPER:  
09:35:59 24 Q. You had not come across any  
09:36:01 25 literature in your scientific study in

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09:36:07 1 your B.S., or your M.S., or your Ph.D.  
09:36:10 2 that discussed smoking and health  
09:36:13 3 effects?  
09:36:14 4 MR. MUEHLBERGER: Object to  
09:36:14 5 the form.  
09:36:15 6 A. I don't recall reading any of  
09:36:18 7 that literature where you might be  
09:36:19 8 talking about smoke chemistry or  
09:36:21 9 anything.  
09:36:23 10 Q. What about in the popular  
09:36:24 11 press or the media?  
09:36:26 12 MR. MUEHLBERGER: Object to  
09:36:26 13 the form.  
09:36:27 14 A. I do recall reading in the  
09:36:42 15 newspaper about the Surgeon General's  
09:36:44 16 report, which I recall was 1964.  
09:36:48 17 Q. What do you recall about that?  
09:36:51 18 A. I recall that the report  
09:36:54 19 actually talked about many  
09:36:56 20 possibilities of smoke causing disease.  
09:37:01 21 Q. You remember that at age 21?  
09:37:03 22 A. No, I was not age 21. That  
09:37:13 23 happened just before I came down to  
09:37:13 24 Gulf, so I was like age 30 at that  
09:37:14 25 time.

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09:37:14 1 Q. So at age 21 when you started  
09:37:14 2 smoking, your answer to the Jury today  
09:37:17 3 is that you don't recall anything about  
09:37:19 4 the health effects from smoking at that  
09:37:25 5 time?  
09:37:25 6 A. I don't.  
09:37:25 7 MR. MUEHLBERGER: Object to  
09:37:25 8 the form.  
09:37:25 9 A. I recall about being warned  
09:37:28 10 about smoking by my family, but I do  
09:37:32 11 not recall specifically that I knew any  
09:37:34 12 of the health effects.  
09:37:34 13 BY MR. HOPPER:  
09:37:53 14 Q. I assume you came into Philip  
09:37:57 15 Morris as a research scientist in '65  
09:38:01 16 into the R & D Department; is that  
09:38:03 17 correct?  
09:38:03 18 A. That is correct.  
09:38:07 19 Q. And that is what they called  
09:38:07 20 it at that time?  
09:38:07 21 A. Yes. It was called the R & D  
09:38:12 22 Department and the lab was called the  
09:38:14 23 Research Center.  
09:38:16 24 Q. When you interviewed for your  
09:38:18 25 job at Philip Morris, did you discuss

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09:38:22 1 smoking as a part of that interview  
09:38:26 2 process?

09:38:28 3 A. No. I don't think we  
09:38:29 4 discussed smoking. We discussed the  
09:38:33 5 physics of smoke aerosols, but if you  
09:38:37 6 say did we discuss smoking, I don't  
09:38:49 7 remember that we did.

09:38:49 8 [REDACTED] Q. You didn't discuss smoking as  
09:38:49 9 a personal affectation or a personal  
09:38:49 10 part of your life at all when you were  
09:38:52 11 part of that interview and first came  
09:38:55 12 into Philip Morris?

09:38:56 13 A. I don't recall that we did,  
09:38:56 14 no.

09:38:58 15 Q. Did they ask you if you  
09:39:00 16 smoked?

09:39:01 17 A. I don't remember whether they  
09:39:10 18 did or not. They told me that you got  
09:39:10 19 [REDACTED] pack of cigarettes free every day or  
09:39:11 20 [REDACTED] something like that.

09:39:12 21 No, I don't recall if they  
09:39:14 22 asked me if I smoked.

09:39:16 23 Q. When you started smoking at  
09:39:18 24 age 21, did you believe that smoking  
09:39:22 25 cigarettes would become addictive?

09:39:25 1 MR. MUEHLBERGER: Object to  
09:39:26 2 the form.

09:39:26 3 A. I would have to answer no, I  
09:39:29 4 didn't even think about it.

09:39:29 5 BY MR. HOPPER:

09:39:31 6 Q. Did you believe it was habit  
09:39:34 7 forming?

09:39:36 8 MR. MUEHLBERGER: Object to  
09:39:36 9 the form.

09:39:36 10 A. I believed it was habit  
09:39:38 11 forming because, I mean, my father  
09:39:41 12 smoked and had for years. So, I  
09:39:45 13 certainly didn't think about  
09:39:47 14 addictiveness.

09:39:49 15 Q. Do you know how long your  
09:39:50 16 father smoked?

09:40:06 17 A. Well, I'm sure he started in  
09:40:06 18 the '30s. I mean, I remember him  
09:40:06 19 smoking. That is why I say when I was  
09:40:10 20 a youngster.

09:40:12 21 Q. Do you know about how old he  
09:40:13 22 was?

09:40:17 23 A. He was born in 1911, so he was  
09:40:18 24 in his 20s when I was born.

09:40:22 25 Q. Did he smoke all his life?

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09:40:25      1      A.      I don't know when he started.  
09:40:31      2      I mean, I would think that he started  
09:40:33      3      when he was in his early 20s when my  
09:40:38      4      mom and he got married, and he  
09:40:42      5      certainly smoked most of the life that  
09:40:44      6      I knew him.  
09:40:47      7      Q.      Is your father still alive?  
09:40:49      8      A.      No, my father is not alive.  
09:40:52      9      Q.      How old was he when he died,  
09:40:54      10     so you recall?  
09:40:55      11     A.      He was 73 when he died.  
09:40:57      12     Q.      Was he still smoking up to the  
09:41:00      13     time he died?  
09:41:00      14     A.      He was not smoking at the time  
09:41:01      15     he died, no.  
09:41:02      16     Q.      Did he smoke up to a year or  
09:41:05      17     so, or a few months to the time he  
09:41:08      18     died?  
09:41:09      19     A.      I think he may have smoked up  
09:41:11      20     to a couple of years before he died,  
09:41:13      21     yes.  
09:41:14      22     Q.      Do you recall what caused his  
09:41:16      23     death?  
09:41:17      24     A.      He had bad circulatory  
09:41:19      25     problems in his leg, and he fell and

INTERVIEW  
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09:41:23     1     broke his leg, had an operation, and he  
09:41:27     2     died from an actual staph infection.  
09:41:31     3     Q.     Did he have Buerger's disease?  
09:41:34     4     MR. MUEHLBERGER:   Object to  
09:41:35     5     the form.  
09:41:35     6     BY MR. HOPPER:  
09:41:35     7     A.     Not that I know of, no.  
09:41:39     8     Q.     He didn't have to have an  
09:41:40     9     amputation?  
09:41:41     10    A.     No, he did not.  
09:41:42     11    Q.     Did the doctors tell him, that  
09:41:53     12    you recall, that his circulation  
09:41:53     13    problems were related to smoking?  
09:41:53     14    MR. MUEHLBERGER:   Object to  
09:41:53     15    the form.  
09:41:53     16    A.     I don't have the slightest  
09:41:53     17    idea of what they told him.  
09:41:53     18    BY MR. HOPPER:  
09:41:53     19    Q.     Did your mother smoke?  
09:41:55     20    A.     No.  
09:41:56     21    Q.     She never smoked?  
09:41:58     22    A.     I think she would be offended  
09:42:00     23    if you asked her if she smoked one  
09:42:07     24    cigarette.  
09:42:07     25    Q.     Why is that?

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09:42:07 1 MR. MUEHLBERGER: Object to  
09:42:07 2 the form.  
09:42:07 3 A. I can't go into her mind, but  
09:42:07 4 she has been very negative about  
09:42:07 5 smoking ever since I have known her.  
09:42:11 6 Q. How did she feel about you  
09:42:14 7 going to work for Philip Morris?  
09:42:18 8 MR. MUEHLBERGER: Object to  
09:42:18 9 the form.  
09:42:18 10 BY MR. HOPPER:  
09:42:18 11 A. I think she was happy to see  
09:42:20 12 me move from Pittsburg to Richmond. I  
09:42:26 13 never heard her say anything about  
09:42:26 14 working for Philip Morris.  
09:42:30 15 Q. But she was opposed to  
09:42:33 16 smoking?  
09:42:34 17 A. And drinking. I would say you  
09:42:37 18 have to put them both in equal amounts  
09:42:42 19 there.  
09:42:42 20 Q. Do you know why your father  
09:42:44 21 stopped smoking?  
09:42:45 22 A. I think my father stopped  
09:42:47 23 smoking because my mother, Number One,  
09:42:51 24 never let him forget he was smoking.  
09:42:54 25 That is certainly Number One. And I

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09:42:58      1    think his health after he retired,  
09:43:00      2    particularly with the circulatory  
09:43:02      3    problems he had, his health was not  
09:43:04      4    good, and I think he then quit smoking.  
09:43:09      5       Q.    Do you think his circulatory  
09:43:12      6    problems were related to the smoking?  
09:43:12      7       MR. MUEHLBERGER:   Object to  
09:43:14      8    the form.  
09:43:14      9       A.    I don't know the answer to  
09:43:15      10   your question.  
09:43:18      11           I mean, his main meal was  
09:43:20      12   hamburgers all his life. So, I just  
09:43:24      13   don't know.  
09:43:26      14       Q.    Do you have brothers and  
09:43:28      15   sisters?  
09:43:29      16       A.    I'm an only child.  
09:43:40      17       Q.    Do you still smoke now?  
09:43:40      18       A.    Yes. I still smoke. I never  
09:43:40      19   smoked at home, ever. Yeah, I get in  
09:43:40      20   Philip Morris in meetings and so forth  
09:43:43      21   and I smoke.  
09:43:45      22       Q.    How often would you say you  
09:43:45      23   smoke?  
09:43:45      24       A.    I'd say -- well, it depends on  
09:43:48      25   how boring the meetings are in general.

09:43:49 1 I could smoke a pack of cigarettes in a  
09:43:52 2 day, or I could smoke half a pack of  
09:43:56 3 cigarettes in a day but I lay them  
09:43:58 4 aside when I go home.

09:44:00 5 Q. So, you have never smoked in  
09:44:04 6 your home?

09:44:04 7 A. I can't say I haven't at  
09:44:05 8 parties and so forth, but it's kind of  
09:44:07 9 a rule of mine that I don't.

09:44:10 10 Q. Why is that?

09:44:11 11 A. Because, basically, I don't  
09:44:13 12 want a cigarette when I go home. I  
09:44:16 13 usually work out and I usually have  
09:44:18 14 things to do.

09:44:19 15 Q. You say you had three kids at  
09:44:22 16 the time you took the job at Philip  
09:44:25 17 Morris?

09:44:25 18 A. Yes.

09:44:25 19 Q. Do you have more kids than  
09:44:25 20 three?

09:44:26 21 A. I have three children.

09:44:26 22 Q. How old are your kids, if I  
09:44:28 23 may ask?

09:44:29 24 A. Well, my oldest son is a  
09:44:35 25 Professor at Evon College, and was born

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09:44:35 1 in 1957. So, I guess he is coming up  
09:44:42 2 on forty-three in a couple of weeks.  
09:44:46 3 My daughter is the manager of  
09:44:48 4 Philip Morris' BL plant. She is a  
09:44:51 5 chemical engineer and a chemist. She  
09:44:55 6 is coming up next year on age forty.  
09:44:59 7 And my youngest son, who works  
09:45:02 8 in the Finance Department of the Organ  
09:45:08 9 Transplant Center here in Richmond,  
09:45:14 10 just had his birthday last week and he  
09:45:16 11 was born in '64, so he's thirty-six.  
09:45:24 12 Q. Do any of your kids smoke?  
09:45:29 13 A. My oldest son does not smoke.  
09:45:32 14 I have seen my daughter and my youngest  
09:45:35 15 son on occasion smoke. I don't know  
09:45:40 16 whether they hide it from me, but only  
09:45:42 17 on occasion.  
09:45:44 18 Q. Have you ever discussed  
09:45:45 19 smoking with your kids?  
09:45:47 20 A. Yes, I told them I didn't want  
09:45:50 21 them to smoke.  
09:46:00 22 Q. Why is that?  
09:46:00 23 A. Because I think it's pretty  
09:46:00 24 obvious that the health community has a  
09:46:00 25 lot of evidence that it causes disease.

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09:46:00 1 Q. Does Philip Morris have  
09:46:00 2 evidence that it causes disease?  
09:46:00 3 MR. MUEHLBERGER: Object to  
09:46:00 4 the form.  
09:46:00 5 A. Well, I think they've been  
09:46:00 6 quite open in saying that we accept the  
09:46:02 7 health community saying it causes  
09:46:05 8 disease and I believe it does.  
09:46:06 9 Q. Since when?  
09:46:06 10 MR. MUEHLBERGER: Object to  
09:46:07 11 the form.  
09:46:07 12 A. I would say I felt that way  
09:46:10 13 for a long time.  
09:46:10 14 Q. For how long?  
09:46:11 15 A. Oh, an easy fifteen years.  
09:46:17 16 Q. Are you still married?  
09:46:17 17 A. Absolutely.  
09:46:17 18 Q. Does your wife smoke?  
09:46:23 19 A. No, she does not.  
09:46:23 20 Q. How does she feel about your  
09:46:24 21 smoking?  
09:46:25 22 A. She is very negative about it.  
09:46:32 23 Q. Why is that?  
09:46:32 24 A. Because she thinks it causes  
09:46:32 25 disease.

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09:46:33 1 Q. Have they ever voiced any  
09:46:35 2 strong or negative opinions about your  
09:46:37 3 work as a scientist for Philip Morris  
09:46:39 4 given their viewpoint about the health  
09:46:42 5 effects of smoking?  
09:46:49 6 A. No. I think certainly my wife  
09:46:49 7 has been very pro me working in  
09:46:54 8 research for Philip Morris and  
09:46:56 9 publishing papers, which I have done a  
09:46:59 10 lot of.  
09:47:01 11 Q. Do you find any contradictions  
09:47:05 12 in their point of view about the health  
09:47:07 13 effects of smoking and your working  
09:47:10 14 there in Research to develop  
09:47:11 15 cigarettes?  
09:47:11 16 MR. MUEHLBERGER: Object to  
09:47:12 17 the form.  
09:47:12 18 A. No. I think I bring a lot to  
09:47:15 19 the table about new ways to reduce,  
09:47:18 20 certainly, the compounds in smoke. And  
09:47:21 21 from that standpoint, I would rather  
09:47:23 22 work on it inside the company than  
09:47:26 23 outside.  
09:47:44 24 Q. When you first came to Philip  
09:47:46 25 Morris as a research scientist in 1965,

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09:47:50 1 were you aware of Philip Morris'  
09:47:56 2 knowledge of the health effects of  
09:47:59 3 smoking?  
09:48:00 4 MR. MUEHLBERGER: Object to  
09:48:01 5 the form.  
09:48:02 6 A. No. I think I was pretty  
09:48:05 7 unaware of almost everything along that  
09:48:08 8 line.  
09:48:08 9 BY MR. HOPPER:  
09:48:09 10 Q. Do you think that Philip  
09:48:10 11 Morris knew of these, without getting  
09:48:13 12 specific, various compounds that you  
09:48:16 13 referred a moment ago that occurred in  
09:48:18 14 mainstream and sidestream smoke when  
09:48:21 15 you came to work there?  
09:48:23 16 MR. MUEHLBERGER: Object to  
09:48:24 17 the form.  
09:48:24 18 A. Well, certainly in '65, I  
09:48:28 19 mean, a lot of the compounds are  
09:48:33 20 dependent upon developing new  
09:48:35 21 instruments, but I'm sure there were  
09:48:38 22 people with Philip Morris that knew  
09:48:40 23 some of the compounds in smoke when I  
09:48:42 24 came there in '65.  
09:48:42 25 BY MR. HOPPER:

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09:48:46 1 Q. Do you know who that would be?

09:48:46 2 MR. MUEHLBERGER: Object to

09:48:45 3 the form.

09:48:47 4 A. Ernie Robb, who went from

09:48:52 5 there to -- I think he went to Harvard.

09:48:56 6 I think certainly Ernie. I

09:48:56 7 would say I heard him talk about

09:48:58 8 polycyclic aromatic hydrocarbons.

09:48:58 9 BY MR. HOPPER:

09:49:22 10 Q. Who else do you think knew

09:49:24 11 about the health effects from smoking

09:49:46 12 at the time you came to work there?.

09:49:46 13 MR. MUEHLBERGER: Object to

09:49:46 14 the form.

09:49:46 15 A. I don't know. I mean, I came

09:49:46 16 in the door with Tom Osdene. We walked

09:49:46 17 in the door together. He was coming at

09:49:46 18 a much higher position, I might add.

09:49:46 19 He was coming from the health

09:49:46 20 community, so, you know, I would

09:49:49 21 surmise that Tom knew more about the

09:49:54 22 chemistry of cigarettes than I

09:49:55 23 certainly did.

09:49:56 24 Q. Did you have discussions with

09:50:05 25 him about that when you first came to

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09:50:05 1 work there?

2 A. No.

3 MR. MUEHLBERGER: Object to

4 the form.

5 BY MR. HOPPER:

6 Q. Let me be more specific,

7 before you answer.

8 Did you have discussions about

9 the various carcinogenic and

10 mutagenetic or teratogenic compounds

11 that occur in mainstream and sidestream

12 smoking?

13 MR. MUEHLBERGER: Object to

14 the form.

15 A. No, I did not.

16 BY MR. HOPPER:

17 Q. You never had any

18 conversations with him about that?

19 MR. MUEHLBERGER: Object to

20 the form.

21 A. No.

22 BY MR. HOPPER:

23 Q.. What led you to believe or

24 leads you to believe that he knew about

25 the health effects caused from smoking?

REC  
REVIEW  
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09:50:28 1 A. Well, I surmised, which I  
09:50:48 2 said, that he was coming from the  
09:50:48 3 health community, and so, he certainly  
09:50:48 4 had a better tie-in than me coming from  
09:50:48 5 the oil company.

09:50:48 6 Q. Who else did you work with at  
09:50:48 7 the time you first came to work there?

09:50:50 8 A. Well, when I first came to  
09:50:51 9 work there, I worked in a group whose  
09:50:55 10 main objective was to look at  
09:50:58 11 electrostatic filtration of cigarette  
09:51:01 12 smoke.

09:51:03 13 Q. Who was in that group?

09:51:04 14 A. Well, my boss was a guy named  
09:51:06 15 Larry Baxt, B-A-X-T.

09:51:06 16 And it was a very small group.  
09:51:11 17 It was a guy named John McDowell, who  
09:51:14 18 was a Canadian; and a guy named Larry  
09:51:18 19 Stewart.

09:51:21 20 Q. Are they all still with the  
09:51:23 21 company?

09:51:24 22 A. I think you are talking to the  
09:51:26 23 only one of the group that is still  
09:51:31 24 with the company.

09:51:36 25 MR. MUEHLBERGER: Could we

1 take a short break?

2 VIDEOGRAPHER: We are going

3 off the record at 9:51.

4 (FOLLOWING A BRIEF RECESS,

5 THE FOLLOWING PROCEEDINGS WERE

6 HAD:)

7 VIDEOGRAPHER: We are going

8 back on the record at 9:57.

9 BY MR. HOPPER:

10 Q. Dr. Lilly, continuing to

11 direct questions at your initial

12 employment when you came to Philip

13 Morris in 1965, what did the company do

14 to inform you or educate you about the

15 process or the procedures you would be

16 working on when you came to Philip

17 Morris?

18 MR. MUEHLBERGER: Object to

19 the form.

20 A. You mean the scientific

21 project I was going to be on?

22 BY MR. HOPPER:

23 Q. Let's start with that.

24 A. Well, when I interviewed, I

25 met with the people on the project.

09:58:25      1    And so, I had a very good feel of what  
09:58:26      2    the project was at the time I took the  
09:58:27      3    interview.

09:58:27      4    Q.    And the project again was, for  
09:58:29      5    the Jury and the record?

09:58:30      6    A.    It was developing -- it was  
09:58:30      7    seeing if one could develop an  
09:58:34      8    electrostatic method of removing smoke  
09:58:41      9    aerosol particles in a filter.

09:58:45      10    Q.    Can you, for the Jury's  
09:58:46      11    benefit, describe the removal of those  
09:58:48      12    aerosol particles?

09:58:52      13    Could you articulate that a  
09:58:53      14    little further so they might be able to  
09:58:57      15    understand it.

09:58:57      16    A.    Yes.

09:58:59      17    MR. MUEHLBERGER: Object to  
09:58:59      18    the form.

09:59:00      19    A.    Smoke is basically a set of  
09:59:03      20    very small particles called an aerosol.  
09:59:09      21    And the fact you can see it is, that  
09:59:11      22    they are small enough that they scatter  
09:59:15      23    light. And they also happen to carry  
09:59:18      24    some charge, electrical charge. Not  
09:59:25      25    very much. But some of them -- half of

Produced by RECORDED BY RICOH

Produced by RTRC

09:59:25      1 them are negative charge and half of  
09:59:27      2 them are positive charge.  
09:59:27      3 BY MR. HOPPER:  
09:59:38      4 Q. Are they ions?  
09:59:38      5 A. Well, they are -- the smoke  
09:59:38      6 particles are kind of liquid, very  
09:59:38      7 small liquid particles. But during the  
09:59:38      8 combustion process, they pick up an  
09:59:42      9 ion. But they not really an ion  
09:59:42      10 because they're too big to be that.  
09:59:52      11 But they pick up, say, an ion  
09:59:52      12 and they have a charge, not very much  
09:59:52      13 charge.  
09:59:52      14 And the idea was if you could  
09:59:54      15 put a permanent electric field on a  
09:59:58      16 piece of plastic, you know, whether it  
10:00:00      17 be, you know, polyethylene or mylar, or  
10:00:03      18 any of these things; you might be able  
10:00:06      19 to enhance the filtration by not only  
10:00:10      20 having the collisions that take place  
10:00:14      21 with the filter fibers, but also have  
10:00:18      22 the electric field that came from these  
10:00:21      23 charged plastics pull things out  
10:00:24      24 because they were charged.  
10:00:24      25 That was the project.

Produced by RTRTC

10:00:27 1 Q. What was your hypothesis and  
10:00:29 2 your objective in that research?  
10:00:31 3 A. To enhance the filtration of  
10:00:34 4 the smoke was the objective.  
10:00:34 5 Q. When you say, "enhance the  
10:00:36 6 filtration," what do you mean?  
10:00:37 7 A. Meaning get more removal of  
10:00:42 8 the smoke in the same distance as it  
10:00:42 9 went through, because of the added  
10:00:45 10 electric field taking the charged  
10:00:48 11 particles out.  
10:00:49 12 Q. When you say, "removal of the  
10:00:53 13 particles from the smoke," are you  
10:00:57 14 saying for the benefit of the smoker?  
10:01:00 15 MR. MUEHLBERGER: Object to  
10:01:03 16 the form.  
10:01:03 17 A. It would allow you to go to  
10:01:04 18 lower tar cigarettes.  
10:01:05 19 BY MR. HOPPER:  
10:01:06 20 Q. And what would be the  
10:01:07 21 objective of that?  
10:01:10 22 MR. MUEHLBERGER: Object to  
10:01:10 23 the form.  
10:01:10 24 A. Well, when I came to the  
10:01:12 25 company, there was lots of effort to

10:01:17 1 lower tar in cigarettes.

10:01:17 2 BY MR. HOPPER:

10:01:17 3 Q. Why?

10:01:19 4 A. I don't really know.

10:01:20 5 Q. Did you ask?

10:01:24 6 A. I don't think I sat down and

10:01:27 7 asked explicitly. I jumped in and

10:01:32 8 started working in the lab to do it.

10:01:40 9 Q. Is it your belief that

10:01:49 10 lowering tar doesn't create a safe

10:01:53 11 cigarette?

10:01:56 12 MR. MUEHLBERGER: Object to

10:01:58 13 the form.

10:01:58 14 A. Well, my belief is there is no

10:02:02 15 safe cigarette. But my belief is also

10:02:06 16 as you lower tar, you certainly cut the

10:02:08 17 dosage that a smoker gets.

10:02:11 18 Q. Dosage of what?

10:02:12 19 A. Tar and nicotine.

10:02:15 20 Q. Did your company, in its

10:02:18 21 advertising, or promotions, or

10:02:21 22 marketing, attempt to convince the

10:02:21 23 public that lowering tar would create a

10:02:25 24 safer cigarette?

25 MR. MUEHLBERGER: Object to

Product  
Review  
Agency  
HHS

10:02:28 1 the form.

10:02:28 2 A. No. Not to my knowledge, no.

10:02:28 3 BY MR. HOPPER:

10:02:37 4 Q. What information or materials

10:02:37 5 were you given by Philip Morris about

10:02:41 6 the company's knowledge of carcinogens

10:02:46 7 in tobacco?

10:02:51 8 MR. MUEHLBERGER: Object to

10:02:51 9 the form.

10:02:51 10 A. I don't recall being given any

10:02:51 11 materials along that line.

10:02:51 12 BY MR. HOPPER:

10:02:53 13 Q. What was RADOC, R-A-D-O-C?

10:03:02 14 A. I don't know.

10:03:04 15 Q. Do you know a gentleman by the

10:03:06 16 name of Alan Bavley? A. Bavley?

10:03:12 17 A. I never knew Bavley. He had

10:03:16 18 left when I got there.

10:03:17 19 Q. You know of him?

10:03:19 20 A. I've seen his name, yes, sir.

10:03:19 21 Q. And did he work in the

10:03:21 22 Research Department -- the Research

10:03:22 23 Center at Philip Morris?

10:03:28 24 MR. MUEHLBERGER: Object to

10:03:28 25 the form.

10:03:28 1 A. Yes, he did.

10:03:28 2 BY MR. HOPPER:

10:03:46 3 Q. I'm showing you a document

10:03:46 4 that is from Mr. Bayley dated 1962, on

10:03:50 5 Philip Morris letterhead. It's

10:03:53 6 interoffice correspondence and we will

10:03:55 7 refer to it as document SA-313. And

10:04:01 8 I'll mark it as an exhibit in a moment.

10:04:04 9 Copied on that is a Dr.

10:04:07 10 Wakeham. Do you know who Dr. Wakeham

10:04:10 11 is?

10:04:10 12 A. Yes.

10:04:11 13 Q. Did you know him?

10:04:12 14 A. Yes.

10:04:13 15 Q. Do you know Dr. C.V. Mace, Jr.,

10:04:15 16 Is?

10:04:16 17 A. I know of him. I did not know

10:04:22 18 him.

10:04:22 19 Q. Do you know who Dr. W. L. Dunn

10:04:23 20 Is?

10:04:23 21 A. Yes.

10:04:23 22 Q. And did you know him?

10:04:24 23 A. Yes.

10:04:24 24 Q. And did you know Dr. R. B.

10:04:27 25 Seligman?

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10:04:27 1 A. Yes.  
10:04:28 2 Q. And did you know a Mr. H. J.  
10:04:32 3 Dooley?  
10:04:33 4 A. No, I do not.  
10:04:35 5 Q. I'm going to have you take  
10:04:47 6 time to look at this document. And  
10:04:47 7 I'll give one to your counsel and one  
10:04:47 8 to you.  
10:04:47 9 A. Okay.  
10:04:48 10 (Tendering document.)  
10:04:49 11 BY MR. HOPPER:  
10:04:56 12 Q. Let me know after you have had  
10:04:59 13 a chance to look at it.  
10:05:01 14 A. Okay.  
10:05:05 15 (Perusing document.)  
10:05:30 16 Okay. I read certainly the  
10:05:30 17 chemistry. I didn't look at all the  
10:05:34 18 recommendations.  
10:05:37 19 Q. Have you ever seen this  
10:05:38 20 document before?  
10:05:41 21 A. I don't recall seeing this  
10:05:41 22 document before.  
10:05:41 23 Q. Is it clear to you that it's  
10:05:44 24 dated July 20, 1962?  
10:05:44 25 MR. MUEHLBERGER: Object to

Produced by RJKTC

10:05:44 1 the form. The document speaks for  
10:05:45 2 itself.

10:05:45 3 A. That is the date I see on the  
10:05:47 4 document?

10:05:47 5 BY MR. HOPPER:

10:05:51 6 Q. It's clear on its face, is  
10:05:51 7 what I'm saying.

10:05:51 8 A. Yes, sir.

10:05:51 9 Q. Is it true that on this  
10:05:53 10 document on the first page, that  
10:05:56 11 Mr. Bavley, the author, has identified  
10:06:02 12 primary carcinogens in smoking?

10:06:15 13 MR. MUEHLBERGER: Object to  
10:06:15 14 the form. The document speaks for  
10:06:15 15 itself.

10:06:15 16 A. He has a column listed,  
10:06:15 17 primary carcinogens.

10:06:15 18 BY MR. HOPPER:

10:06:19 19 Q. I'm sorry, I didn't understand  
10:06:19 20 you.

21 A. He has a column listed,  
22 primary carcinogens.

23 Q. And what are some of those  
24 primary carcinogens that he has  
25 identified here?

Produced by R.R.I.C.

10:06:34 1 MR. MUEHLBERGER: Objection.  
10:06:34 2 The document speaks for itself.  
10:06:34 3 A. Well, benzo(a)pyrene,  
10:06:34 4 benzo(e)pyrene.  
10:06:37 5 And then he has got dibenzo  
10:06:40 6 anthracene, and dibenz(a,j)acridine,  
10:06:40 7 7H-dibenzo(c,g) carbazole chrysene.  
10:06:57 8 Maybe I left one out. But  
10:06:57 9 that is basically what he has.  
10:07:00 10 Q. Has he identified other  
10:07:02 11 polynuclear hydrocarbons?  
10:07:02 12 MR. MUEHLBERGER: Object to  
10:07:08 13 the form. The document speaks for  
10:07:08 14 itself.  
10:07:09 15 A. Well, these are a few of what  
10:07:12 16 are called polyaromatic, polycyclic  
10:07:17 17 hydrocarbons. There are others.  
10:07:19 18 BY MR. HOPPER:  
10:07:20 19 Q. Has he identified other  
10:07:22 20 primary carcinogens, such as arsenous  
10:07:22 21 oxide and B-naphthol?  
10:07:22 22 MR. MUEHLBERGER: Object to  
10:07:24 23 the form.  
10:07:24 24 Counsel, this document speaks  
10:07:24 25 for itself. There is no foundation

10:07:25 1 for this witness.

10:07:27 2 If you have questions of him,

10:07:29 3 fine. But I think --

10:07:30 4 MR. HOPPER: I'm leading up to

10:07:31 5 the questions. I've got to ask him

10:07:33 6 if he understands this and if he

10:07:37 7 can identify it so I can ask the

10:07:39 8 questions. So, it is leading up.

10:07:39 9 MR. MUEHLBERGER: Okay.

10:07:40 10 A. There is another list of other

10:07:42 11 primary carcinogens.

10:07:42 12 BY MR. HOPPER:

10:07:44 13 Q. And what would those be?

10:07:46 14 A. The arsenous oxide and the

10:07:46 15 naphthal.

10:07:50 16 Q. And what about some of the

10:07:50 17 other compounds he seems to identify

10:07:51 18 here?

10:07:51 19 Are you familiar with pyrene?

10:07:57 20 A. I'm slightly familiar with

10:07:57 21 pyrene.

10:07:57 22 Q. Fluoranthrene?

10:08:03 23 A. Yes.

10:08:03 24 Q. Methylpyrene?

10:08:04 25 A. Yes.

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10:08:05 1 Q. And what about some of the  
10:08:06 2 irritants that he has identified such  
10:08:11 3 as the phenols and acrolein and oxides?  
10:08:11 4 MR. MUEHLBERGER: Object to  
10:08:12 5 the form.  
10:08:12 6 A. Yes.  
10:08:12 7 BY MR. HOPPER:  
10:08:13 8 Q. And he has identified gaseous  
10:08:18 9 poisons. What would some of those  
10:08:22 10 gaseous poisons be that you are aware  
10:08:33 11 of?  
10:08:33 12 MR. MUEHLBERGER: Object to  
10:08:33 13 the form.  
10:08:33 14 A. Well, he has listed carbon  
10:08:33 15 monoxide.  
10:08:33 16 BY MR. HOPPER:  
10:08:33 17 Q. And has he identified  
10:08:33 18 alkaloids, primarily nicotine?  
10:08:37 19 MR. MUEHLBERGER: Object to  
10:08:42 20 the form.  
10:08:42 21 A. Yes, he has mentioned primary  
10:08:42 22 nicotine.  
10:08:42 23 BY MR. HOPPER:  
10:08:56 24 Q. He has identified all these  
10:08:56 25 compounds as existing in cigarettes?

Produced by Rightful

10:08:57 1 MR. MUEHLBERGER: Object to  
10:08:58 2 the form. Document speaks for  
10:09:01 3 itself.  
10:09:01 4 A. He says tobacco smoke contains  
10:09:04 5 these compounds.  
10:09:04 6 BY MR. HOPPER:  
10:09:07 7 Q. And were you aware of this  
10:09:08 8 when you came to the company in 1965,  
10:09:11 9 that these compounds existed?  
10:09:11 10 MR. MUEHLBERGER: Object to  
10:09:13 11 the form.  
10:09:13 12 A. No.  
10:09:13 13 BY MR. HOPPER:  
10:09:14 14 Q. You were not?  
10:09:15 15 A. No.  
10:09:15 16 Q. When did you become aware of  
10:09:17 17 these compounds?  
10:09:17 18 MR. MUEHLBERGER: Object to  
10:09:21 19 the form.  
10:09:21 20 A. I became aware of the main  
10:09:22 21 compounds after I had been with the  
10:09:26 22 company probably ten years. Six years,  
10:09:28 23 I spent in the non-tobacco business.  
10:09:28 24 BY MR. HOPPER:  
10:09:39 25 Q. So, from '65, until you became

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10:09:45      1    -- was it a Senior Scientist or was it  
10:09:50      2    an Associate Principal Scientist that  
10:09:53      3    you moved to the tobacco side of the  
10:09:54      4    business?

10:09:55      5    A. I was in the tobacco research  
10:09:57      6    business until early '67, working on  
10:10:01      7    the electrical removal of smoke in  
10:10:07      8    cigarette filters.

10:10:09      9    Early in '67, I moved to PM,  
10:10:14      10   Industrial in the non-tobacco business.  
10:10:17      11   And returned to the research lab in  
10:10:21      12   1973.

10:10:38      13   Q. So, from '67 until '73, you  
10:10:38      14   were out of the tobacco side of the  
10:10:40      15   business?

10:10:40      16   A. That's correct. I was in the  
10:10:42      17   lab, actually close to this building,  
10:10:45      18   but it was the non-tobacco business.

10:11:03      19   Q. Do you think that given the  
10:11:06      20   company's knowledge of these compounds  
10:11:09      21   as early as 1962, they were withholding  
10:11:13      22   this information from you?

10:11:15      23   . MR. MUEHLBERGER: Object to  
10:11:15      24   the form.

10:11:16      25   A. No, I have never really felt

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KAMINSKI

10:11:20 1 that Philip Morris withheld anything  
10:11:21 2 from me.

10:11:21 3 BY MR. HOPPER:

10:11:22 4 Q. Well, why wouldn't they have  
10:11:25 5 told you about these carcinogenic  
10:11:28 6 compounds in tobacco smoke when you  
10:11:30 7 were working on tobacco smoke?

10:11:30 8 MR. MUEHLBERGER: Object to  
10:11:33 9 the form.

10:11:33 10 A. Well, I was working in a  
10:11:35 11 special form of tobacco smoke, the  
10:11:37 12 physics of electrical fields.

10:11:43 13 I certainly have learned a lot  
10:11:43 14 more about organic chemistry in the  
10:11:50 15 last few years than I certainly knew  
10:11:50 16 coming in. And I expect that if I had  
10:11:55 17 read the literature, I would have found  
10:11:56 18 exactly what Dr. Bavley writes down  
10:11:58 19 here.

10:11:58 20 BY MR. HOPPER:

10:12:01 21 Q. In your investigation of the  
10:12:01 22 electrostatic methods of cigarette  
10:12:05 23 smoke, and your efforts to attempt to  
10:12:08 24 remove the tar, or the particles, what  
10:12:33 25 part of the tar were you attempting to

BY RITTER  
AC Company  
Composition

10:12:33 1 remove?

10:12:33 2 MR. MUEHLBERGER: Object to

10:12:33 3 the form.

10:12:33 4 A. Well, I mean, tar is made up

10:12:33 5 of five thousand compounds. Maybe a

10:12:33 6 little fewer or a little more. But we

10:12:33 7 didn't have any specific thing that we

10:12:33 8 were trying to remove. We were trying

10:12:33 9 to reduce tar in general.

10:13:04 10 MR. HOPPER: I'm marking the

10:13:05 11 document that has been referred to

10:13:06 12 in the course of this questioning

10:13:09 13 as Lilly Exhibit Number 5.

14 (Whereupon, the document was

15 marked as Exhibit No. 5 for

16 Identification.)

17 BY MR. HOPPER:

18 Q. When you came back to --

19 MR. MUEHLBERGER: Excuse me.

20 For the record, he was looking at

21 this document.

22 Shouldn't this be the one we

23 mark, rather than what you just

24 handed him?

25 MR. HOPPER: It's the same

Produced by R.R.K.T.C

10:13:52 1 thing. Just a copy of it.  
10:13:53 2 I'm happy to take the sticker  
10:13:56 3 off it and put it on the other one,  
10:13:56 4 if you want.  
10:14:02 5 MR. MUEHLBERGER: Okay, I just  
10:14:02 6 think it's a good idea that we mark  
10:14:05 7 the actual document, because some  
10:14:05 8 of these have various other  
10:14:08 9 things written on them.  
10:14:08 10 MR. HOPPER: Sure, no problem.  
10:14:16 11 Let's go off the record for  
10:14:17 12 just a second.  
10:14:20 13 VIDEOGRAPHER: Going off the  
10:14:22 14 record at 10:13.  
10:14:24 15 (Off record.)  
10:14:59 16 VIDEOGRAPHER: Back on the  
10:14:59 17 record at 10:14.  
10:15:02 18 MR. HOPPER: I am presenting  
10:15:05 19 into the record what has been  
10:15:08 20 marked as Lilly Exhibit Number 5  
10:15:11 21 titled, "The Medically Accepted  
10:15:15 22 Cigarette," and it's from an A.  
10:15:17 23 Bayley dated 1962.  
10:15:22 24 MR. MUEHLBERGER: I'm  
10:15:22 25 reserving all of my objections.

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10:15:22 1 MR. HOPPER: Sure.  
10:15:26 2 BY MR. HOPPER:  
10:15:26 3 Q. By the way, Dr. Lilly, do you  
10:15:27 4 think that all of those compounds  
10:15:29 5 identified in Dr. Bavley's memo would  
10:15:34 6 need to be removed in order to create a  
10:15:37 7 medically acceptable cigarette?  
10:15:37 8 MR. MUEHLBERGER: Object to  
10:15:40 9 the form.  
10:15:40 10 A. I think the list that I have  
10:15:42 11 seen, you know, from the  
10:15:42 12 Hoffmann-Wynder, WHO, does not include  
10:15:52 13 some of those compounds. I would have  
10:15:52 14 to study it in more detail.  
10:15:52 15 BY MR. HOPPER:  
10:15:53 16 Q. Would nicotine need to be  
10:15:54 17 removed?  
10:15:54 18 MR. MUEHLBERGER: Object to  
10:15:56 19 the form.  
10:15:56 20 A. Well, we did remove nicotine a  
10:16:00 21 few years ago.  
10:16:00 22 BY MR. HOPPER:  
10:16:01 23 Q. Yes, I understand that. But  
10:16:01 24 would you need to remove nicotine to  
10:16:05 25 create a medically acceptable

Produced by RIE

10:16:07 1 cigarette?

10:16:07 2 MR. MUEHLBERGER: Object to

10:16:07 3 the form.

10:16:07 4 A. I don't know the answer to

10:16:08 5 that.

10:16:08 6 BY MR. HOPPER:

10:16:09 7 Q. Why is that? Why don't you

10:16:12 8 know the answer?

10:16:13 9 A. I don't know the answer to

10:16:14 10 that because in my mind there are some

10:16:18 11 compounds that are more important than

10:16:20 12 nicotine that were listed even there.

10:16:21 13 And I don't know what the

10:16:22 14 medical community thinks about nicotine

10:16:25 15 these days.

10:16:26 16 Q. Well, I'm not asking you to

10:16:31 17 tell the Jury what you think the

10:16:31 18 medical community or the health

10:16:35 19 community thinks about it. I'm asking

10:16:35 20 you, in your opinion as an expert on

10:16:37 21 behalf of Philip Morris if nicotine

10:16:40 22 would need to be removed in order to

10:16:43 23 create a medically acceptable

10:16:45 24 cigarette?

10:16:45 25 MR. MUEHLBERGER: Object to

10:16:45 1 the form. Your question implies  
10:16:45 2 what you just told him you didn't  
10:16:48 3 want to consider.  
10:16:45 4 A. In my opinion, I would say no.  
10:16:45 5 BY MR. HOPPER:  
10:16:46 6 Q. Why is that?  
10:16:49 7 A. Because I think the effects of  
10:16:51 8 nicotine are, at least in my knowledge,  
10:16:55 9 not being an M.D., are less severe than  
10:17:00 10 some of the other compounds listed  
10:17:02 11 there.  
10:17:03 12 Q. Is nicotine a poison?  
10:17:08 13 MR. MUEHLBERGER: Object to  
10:17:05 14 the form.  
10:17:05 15 A. It's a poison in large  
10:17:11 16 amounts.  
10:17:11 17 BY MR. HOPPER:  
10:17:49 18 Q. When you came back in 1973 to  
10:17:52 19 the tobacco side, were you -- on your  
10:17:55 20 C.V., were you an Associate Principal  
10:17:59 21 Scientist at that time?  
10:18:01 22 A. No, I became an Associate  
10:18:04 23 Principal Scientist in 1974. So, I had  
10:18:04 24 a title of Senior Scientist when I came  
10:18:08 25 back.

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SEARCHED INDEXED  
SERIALIZED FILED

Produced by RTI

- 10:18:08 1 Q. And what did you work on then?
- 10:18:10 2 A. When I came back, at the time
- 10:18:12 3 we moved into the new labs that the
- 10:18:16 4 tower represents today, I ran a program
- 10:18:20 5 called combustion research.
- 10:18:38 6 Q. What was the hypothesis and
- 10:18:40 7 objective of that project?
- 10:18:42 8 A. Well, it was a pretty large
- 10:18:45 9 project that -- in which we basically
- 10:18:57 10 studied how a cigarette worked. And
- 10:18:57 11 from that standpoint, I mean, the
- 10:18:57 12 physics and chemistry of how a
- 10:18:57 13 cigarette worked.
- 10:19:10 14 Q. Before you did this project,
- 10:19:14 15 did Philip Morris know how a cigarette
- 10:19:15 16 worked from the standpoint of the
- 10:19:17 17 physics and the chemistry?
- 10:19:20 18 MR. MUEHLBERGER: Object to
- 10:19:20 19 the form.
- 10:19:20 20 A. In my opinion, no.
- 10:19:20 21 BY MR. HOPPER:
- 10:19:22 22 Q. Had there been prior research?
- 10:19:22 23 MR. MUEHLBERGER: Object to
- 10:19:26 24 the form.
- 10:19:26 25 A. There had been prior research

Produced by R.R.  
LIBRARY

10:19:28 1 but I don't think the prior research  
10:19:30 2 was really focused on all the physics  
10:19:34 3 and chemistry.

10:19:44 4 BY MR. HOPPER:

10:19:45 5 Q. How long did this project  
10:19:46 6 take?

10:19:48 7 A. Well, we started in, I would  
10:19:52 8 say mid-year 1973. It went on for a  
10:19:56 9 number of years. I left the project in  
10:19:59 10 mid-year 1976.

10:20:06 11 Q. And in '74, you became an  
10:20:09 12 Associate Principal Scientist?

10:20:11 13 A. Yes. That's correct.

10:20:13 14 Q. And you began to focus on  
10:20:17 15 something other than this combustion  
10:20:19 16 research?

10:20:20 17 A. No. I continued in the  
10:20:21 18 combustion research area of research  
10:20:23 19 until mid-year 1976.

10:20:29 20 Q. You just got a title and a  
10:20:32 21 promotion change, then?

10:20:33 22 A. Yes.

10:20:34 23 Q. A title change and a  
10:20:38 24 promotion?

10:20:38 25 A. I got a title change on the

Produced by R.R.C.

10:20:40 1 technical ladder, yes, it's the ladder  
10:20:43 2 going up. That's what happened.

10:20:48 3 Q. Then from '76 on, as an  
10:20:53 4 Associate Principal Scientist until  
10:20:56 5 '81, what projects did you work on  
10:21:00 6 then?

10:21:01 7 A. The reason I got pulled out of  
10:21:03 8 the combustion research program was, I  
10:21:06 9 was appointed in charge of a project to  
10:21:12 10 develop tools for ventilating  
10:21:16 11 cigarettes.

10:21:31 12 Q. What was the hypothesis and  
10:21:33 13 objective of this research project?

10:21:45 14 A. Well, the objective of the  
10:21:48 15 research project was to develop  
10:21:48 16 processes, machinery, and factories to  
10:21:50 17 allow us to effectively perforate  
10:21:56 18 cigarettes so we could have ventilated  
10:22:07 19 filters.

10:22:07 20 Q. For the Jury's benefit, what  
10:22:07 21 is a ventilated filter?

10:22:09 22 A. Well, one of the secrets of  
10:22:13 23 getting lower tar cigarettes is to  
10:22:17 24 somehow bypass some of the air that  
10:22:20 25 goes through the coal so that it

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10:22:25 1 doesn't really create more smoke.  
10:22:29 2 And one of the standard  
10:22:31 3 techniques in the industry for a long  
10:22:38 4 time has been to put holes in the  
10:22:38 5 filter so when you take a puff on the  
10:22:39 6 cigarette, part of the air you draw  
10:22:41 7 into your mouth bypasses the coal of  
10:22:47 8 the cigarette and goes through those  
10:22:50 9 holes.  
10:22:56 10 Q. Well, what did you actually  
10:22:57 11 have to do in the project in order to  
10:23:02 12 reach that objective?  
10:23:05 13 Did you simply have to put  
10:23:07 14 holes in the filter?  
10:23:07 15 MR. MUEHLBERGER: Object to  
10:23:07 16 the form.  
10:23:09 17 BY MR. HOPPER:  
10:23:09 18 Q. Were you testing it? Is that  
10:23:12 19 what you were doing.  
10:23:17 20 MR. MUEHLBERGER: Object to  
10:23:17 21 the form.  
10:23:17 22 A. No. It was more complicated  
10:23:18 23 than that.  
10:23:20 24 There had been available ways  
10:23:22 25 to effectively mechanically put holes

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10:23:25      1 in the filter. None of them were very  
10:23:31      2 good. They were not very repeatable.  
10:23:34      3 They really didn't precisely allow you  
10:23:39      4 to change the ventilation.

10:23:41      5 We started out doing it with  
10:23:45      6 electric spark. And we had to develop  
10:23:48      7 high speed machines that put a known  
10:23:51      8 pattern of sparks on the paper before  
10:23:55      9 we made cigarettes, and control the  
10:23:59      10 energy and the size of those holes.

10:24:02      11 And then later on in the  
10:24:04      12 project, we went to carbon dioxide  
10:24:10      13 lasers and developed the same type of  
10:24:12      14 thing with the lasers.

10:24:15      15 And we had to build machinery.  
10:24:18      16 We built, I think, about eighty of the  
10:24:21      17 electrostatic spark machines. And we  
10:24:23      18 built a number of the laser machines.  
10:24:23      19 And then we had to built actual  
10:24:28      20 factories to run them.

10:24:28      21 BY MR. HOPPER:

10:24:28      22 Q. And all of this was for the  
10:24:30      23 objective of trying to lower the tar  
10:24:35      24 through the filtration process?

10:24:35      25 MR. MUEHLBERGER: Object to

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10:24:37 1 the form.  
10:24:37 2 A. Yes, that's correct.  
10:24:37 3 BY MR. HOPPER:  
10:24:37 4 Q. And again, why were you  
10:24:39 5 attempting to lower tar?  
10:24:39 6 MR. MUEHLBERGER: Object to  
10:24:39 7 the form. Asked and answered.  
10:24:40 8 A. Well, we were working under  
10:24:43 9 the premise that --  
10:24:43 10 MR. HOPPER: One second.  
10:24:44 11 But in the context of the  
10:24:46 12 filtration. I asked the question a  
10:24:48 13 little differently earlier, just  
10:24:51 14 for clarification for the record.  
10:24:51 15 BY MR. HOPPER:  
10:24:55 16 Q. Sorry, Doctor, go ahead.  
10:24:55 17 A. It was our feeling in the  
10:24:58 18 scientific group that the consumers of  
10:25:01 19 our cigarettes ought to have options of  
10:25:08 20 getting whatever tar they happened to  
10:25:08 21 want, whether it was one milligram,  
10:25:09 22 five, ten or Marlboro at sixteen.  
10:25:09 23 Q. What was the thinking behind  
10:25:11 24 that though? Why?  
10:25:15 25 MR. MUEHLBERGER: Object to

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10:25:15      1      the form.

10:25:22      2      A.    I think it was based on the

10:25:23      3      premise that the old toxicology thing,

10:25:30      4      "That the poison is in the dose," that

10:25:41      5      we wanted to give consumers an option

10:25:44      6      of getting everything in the tar range

10:25:44      7      that the company could produce.

10:25:44      8      BY MR. HOPPER:

10:25:58      9      Q.    Did you study toxicology?

10:26:00      10     A.    I did not study toxicology.

10:26:03      11     But I'm reading a book called, "The

10:26:06      12     Poison is in the Dose." It's on my

10:26:08      13     bookshelf at home.

10:26:09      14     Q.    And who is the author of that?

10:26:11      15     A.    It's a lady who works out in

10:26:13      16     California. I'm sorry, I forget her

10:26:17      17     name.

10:26:17      18     Q.    You never read or consulted

10:26:20      19     Coull's Toxicology back at this time

10:26:25      20     when you were working on this issue?

10:26:29      21     MR. MUEHLBERGER: Object to

10:26:29      22     the form.

10:26:29      23     A.    No.

10:26:29      24     BY MR. HOPPER:

10:26:29      25     Q.    Or any other toxicology

10:26:33 1 reference books?

10:26:33 2 MR. MUEHLBERGER: Same

10:26:33 3 objection.

10:26:34 4 A. No

10:26:34 5 BY MR. HOPPER:

10:26:34 6 Q. Even though you were aware the

10:26:36 7 objective of the project was to try to

10:26:39 8 get the poisons out or down in the

10:26:41 9 dose?

10:26:41 10 MR. MUEHLBERGER: Object to

10:26:42 11 the form.

10:26:42 12 A. The project was to allow us to

10:26:47 13 put low-tar cigarettes, lower-tar

10:26:49 14 cigarettes, on the market.

10:26:49 15 BY MR. HOPPER:

10:27:06 16 Q. Was that done because your

10:27:06 17 marketing people had made that

10:27:06 18 determination? Or was that done from a

10:27:09 19 scientific standpoint?

10:27:10 20 MR. MUEHLBERGER: Object to

10:27:10 21 the form.

10:27:15 22 A. I don't know.

10:27:15 23 BY MR.. HOPPER:

10:27:15 24 Q. What do you think was driving

10:27:15 25 that?

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10:27:15 1 MR. MUEHLBERGER: Object to  
10:27:15 2 the form.  
10:27:16 3 A. From where I sat in the  
10:27:17 4 research lab, it was being driven by  
10:27:19 5 scientific concerns.  
10:27:29 6 BY MR. HOPPER:  
10:27:29 7 Q. Had you ever conferred with  
10:27:29 8 any of the marketing people?  
10:27:29 9 A. No.  
10:27:29 10 MR. MUEHLBERGER: Object to  
10:27:30 11 the form.  
10:27:30 12 BY MR. HOPPER:  
10:27:30 13 Q. Had your bosses?  
10:27:30 14 MR. MUEHLBERGER: Object to  
10:27:32 15 the form.  
10:27:32 16 A. I don't know.  
10:27:32 17 BY MR. HOPPER:  
10:27:32 18 Q. You don't know if they met on  
10:27:35 19 any frequent basis, or any basis with  
10:27:39 20 marketing people?  
10:27:41 21 MR. MUEHLBERGER: Object to  
10:27:41 22 the form.  
10:27:42 23 A. Well, I mean, I know that  
10:27:42 24 there were meetings in which marketing  
10:27:47 25 people attended.

10:27:48 1 I was not -- I'm not familiar,  
10:27:49 2 you know, subject matter meetings that  
10:27:53 3 would occur other than that.

10:27:59 4 BY MR. HOPPER:

10:27:56 5 Q. You were promoted and you also  
10:27:58 6 had a title change in '84, to Research  
10:28:03 7 Fellow and Director of Technology  
10:28:03 8 Assessment. Is that when you reported  
10:28:06 9 to Cathy Ellis?

10:28:06 10 A. Well, I had a promotion in  
10:28:12 11 '81, to what was called Principal  
10:28:12 12 Scientist.

10:28:13 13 Q. Correct.

10:28:13 14 A. Which was the top of the  
10:28:15 15 technical ladder at that time.

10:28:17 16 And then in 1984, I actually  
10:28:23 17 was promoted to Research Fellow, which  
10:28:28 18 was the first Research Fellow I think  
10:28:30 19 the company had.

10:28:31 20 No. I didn't report to Cathy  
10:28:34 21 then. I actually reported to Max  
10:28:39 22 Hauserman at that time.

10:28:44 23 Q. Was Dr. Hauserman the head of  
10:28:54 24 Research and Development at the time?

10:28:54 25 A. His title was Vice-President

10:28:54 1 of Research and Development, that's  
10:28:54 2 correct.

10:28:54 3 Q. Was Harold Burnley the  
10:28:57 4 Vice-President of Process Development  
10:29:00 5 at that time?

10:29:02 6 A. No. Harold was the Director,  
10:29:06 7 if I recall, of Process Development at  
10:29:08 8 that time in the Engineering  
10:29:09 9 Department, which was at that time a  
10:29:13 10 separate department.

10:29:16 11 Q. Was your work in developing  
10:29:16 12 the process machinery and equipment to  
10:29:19 13 develop a ventilated filter in  
10:29:20 14 collaboration with Mr. Burnley and his  
10:29:26 15 colleagues in the Process Development  
10:29:28 16 Department, or division I should say?

10:29:31 17 MR. MUEHLBERGER: Object to  
10:29:31 18 the form.

10:29:32 19 A. Well, actually, I didn't work  
10:29:34 20 with Harold. I worked with some people  
10:29:39 21 who probably reported to Harold.

10:29:44 22 And I mainly worked with a guy  
10:29:48 23 named D. F. Grollman.

10:29:48 24 But there were some people who  
10:29:48 25 actually built the machinery. So, I'm

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10:29:52 1 not sure they were working for Harold  
10:29:52 2 or the mechanical engineering people.  
10:29:52 3 Q. But you worked with the  
10:29:53 4 Process Development Division, correct?  
10:29:56 5 MR. MUEHLBERGER: Object to  
10:29:57 6 the form.  
10:29:57 7 A. Well, when we were developing  
10:30:00 8 the process, it was largely R & D  
10:30:04 9 people.  
10:30:04 10 It was largely physics people  
10:30:07 11 because we were doing a lot of fairly  
10:30:15 12 high physics, particularly with the  
10:30:15 13 lasers.  
10:30:18 14 When we built the factory,  
10:30:18 15 then the Engineering Department came in  
10:30:17 16 and they took our initial prototypes  
10:30:21 17 and then reproduced them for the  
10:30:23 18 factory.  
10:30:25 19 BY MR. HOPPER:  
10:30:30 20 Q. Then in '96, to the present  
10:30:36 21 day, you took on the title of  
10:30:39 22 Vice-President of Technology, a  
10:30:42 23 Research Fellow; correct?  
10:30:44 24 A. That's correct, sir.  
10:30:45 25 Q. And that is your current title

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BY RPLC

10:30:48 1 still?  
10:30:48 2 A. Yes.  
10:30:49 3 Q. Since the publication of this  
10:30:51 4 C.V.?  
10:30:52 5 A. That's correct.  
10:30:54 6 Q. When did you begin to report  
10:30:55 7 to Cathy Ellis?  
10:30:58 8 A. I actually reported to Cathy  
10:31:01 9 Ellis -- when Ken Houghton retired,  
10:31:10 10 Cathy Ellis became the Vice-President  
10:31:12 11 of Research and Development and at that  
10:31:15 12 time, I reported to her.  
10:31:16 13 I believe that started in the  
10:31:17 14 fall of 1996.  
10:31:23 15 Q. So in '84, you reported to Max  
10:31:28 16 Hauserman and then eventually you  
10:31:30 17 reported to Mr. Houghton?  
10:31:33 18 A. When Dr. Houghton came -- I  
10:31:40 19 guess he came over at the beginning of  
10:31:46 20 1986. And then I reported to Dr.  
10:31:47 21 Houghton until he retired in the Fall  
10:31:59 22 of 1996.  
10:32:22 23 Q. Then you reported from 1996  
10:32:22 24 until what date, to Ms. Ellis?  
10:32:27 25 A. In the Fall of 1997, Jack

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10:32:37      1   Nelson came from New York to become  
10:32:40      2   Vice-President of Operations, and then  
10:32:44      3   I reported to Mr. Nelson at the time  
10:32:47      4   that that happened, which was the Fall  
10:32:50      5   of 1997.

10:32:52      6   Q.   '87 or 1997?  
10:32:55      7   A.   1997. I reported to Cathy  
10:32:58      8   from the Fall of 1996 to the Fall of  
10:33:02      9   1997. And then I reported to Jack  
10:33:06      10   Nelson from the Fall of '97 until just  
10:33:08      11   recently.

10:33:18      12   Q.   And who do you report to now?  
10:33:20      13   A.   Well, Jack Nelson was just  
10:33:24      14   made President of Philip Morris,  
10:33:27      15   International. And so now, Mr. Urs  
10:33:32      16   Nyffeler is the Vice-President of  
10:33:34      17   Research and Development, and I report  
10:33:37      18   to Mr. Nyffeler.

10:33:43      19   Q.   So, he's Vice-President over  
10:33:45      20   all of R & D, and you're Vice-President  
10:33:50      21   for Technology and you also retain the  
10:33:54      22   title as a Research Fellow?  
10:33:55      23   A..   That's correct.  
10:33:56      24   Q.   Do you still conduct bench  
10:34:00      25   research or conduct research projects

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10:34:00 1 for the company?  
10:34:01 2 MR. MUEHLBERGER: Object to  
10:34:01 3 the form.  
10:34:02 4 A. Well, what I do -- the answer  
10:34:03 5 to your question is, yes, sometimes.  
10:34:06 6 Mostly theory, by the way.  
10:34:10 7 I work largely in the new and  
10:34:13 8 emerging technology area of R & D. I  
10:34:22 9 set up technology programs. I direct a  
10:34:24 10 lot of those programs. And I'm  
10:34:26 11 involved in a lot of the outside  
10:34:31 12 funding that we do at national labs and  
10:34:33 13 universities.  
10:34:35 14 I'm involved in searching for  
10:34:37 15 technology that we think we are going  
10:34:40 16 to need in the house in the next few  
10:34:43 17 years.  
10:34:43 18 So, I operate in kind of that  
10:34:46 19 mode.  
10:34:53 20 MR. HOPPER: Why don't we take  
10:34:57 21 a break for a few minutes.  
10:35:00 22 VIDEOGRAPHER: Going off the  
10:35:02 23 record at 10:34.  
10:35:06 24 (FOLLOWING A BRIEF RECESS, THE  
10:45:34 25 FOLLOWING PROCEEDINGS WERE HAD:)

10:45:36 1                   VIDEOGRAPHER: We are now back  
10:45:37 2                   on the record at 10:45.  
10:45:37 3 BY MR. HOPPER:  
10:45:43 4 Q. Dr. Lilly, you are being  
10:45:47 5 offered here today as both a fact and  
10:45:51 6 an expert witness; is that correct?  
10:45:52 7 A. That's correct, sir.  
10:45:54 8 Q. In your capacity as an expert  
10:45:57 9 witness, how would you define the area  
10:46:00 10 of your expertise?  
10:46:03 11 A. Well, I have spent a good many  
10:46:09 12 years understanding the physics and  
10:46:10 13 chemistry of filtration, diffusion and  
10:46:12 14 combustion. And basically, those are  
10:46:22 15 the elements one uses to design  
10:46:22 16 cigarettes.  
10:46:22 17 I have also been quite  
10:46:24 18 involved in all of the nonconventional  
10:46:27 19 cigarettes such as the Accord and Oasis  
10:46:33 20 that the company has put on the market.  
10:46:36 21 And I have also been involved  
10:46:39 22 in understanding a lot of the processes  
10:46:42 23 that go on around the tobacco business.  
10:46:44 24 Q. In your statement of opinion,  
10:46:49 25 you list that you are a fact and a

10:46:54 1 expert witness in the function,  
10:46:56 2 construction and components of  
10:46:59 3 conventional and nonconventional  
10:47:04 4 cigarettes.

10:47:04 5 What is the function of a  
10:47:06 6 conventional cigarette?

10:47:10 7 A. I define conventional  
10:47:10 8 cigarettes, which by the way are mostly  
10:47:13 9 what is mostly sold in the world, as  
10:47:17 10 cigarettes in which the tobacco itself  
10:47:21 11 acts as the heat source to create the  
10:47:26 12 compounds that are delivered in smoke.

10:47:30 13 Q. So, is the function of a  
10:47:33 14 conventional cigarette to serve as a  
10:47:35 15 nicotine delivery device?

10:47:39 16 MR. MUEHLBERGER: Object to  
10:47:39 17 the form.

10:47:39 18 A. Well, the conventional  
10:47:41 19 cigarette delivers smoke. One of the  
10:47:45 20 components, of course, is nicotine.

10:47:45 21 BY MR. HOPPER:

10:47:49 22 Q. The alkaloids?

10:47:50 23 A. There are other alkaloids but  
10:47:53 24 that's the main alkaloid.

10:47:53 25 Q. Very few, right?

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10:47:56 1 A. Well, there are a few more.  
10:47:54 2 There are about four more.  
10:47:58 3 Q. What is the construction of a  
10:48:00 4 conventional cigarette?  
10:48:06 5 A. Well, basically, a  
10:48:08 6 conventional cigarette has a blend of  
10:48:11 7 tobacco. Generally, of three types,  
10:48:15 8 oriental, burley and flue-cured. Along  
10:48:23 9 with some portion of that that has been  
10:48:29 10 puffed up or expanded. And a couple of  
10:48:31 11 reconstituted products. One made by a  
10:48:36 12 paper making process called refined  
10:48:40 13 leaf or RL; and another one made by  
10:48:43 14 basically ground up dust, kind of like  
10:48:50 15 a cookie batter that's called blended  
10:48:50 16 leaf or BL.  
10:48:57 17 This is surrounded with a flax  
10:48:59 18 paper that is very thin and diffuses  
10:49:01 19 gases in and out quite easily.  
10:49:03 20 And then there is a filter  
10:49:06 21 largely made out of cellulous acetate  
10:49:10 22 fibers that's put at the end of the  
10:49:13 23 tobacco column.  
10:49:16 24 Q. Having said all that, isn't it  
10:49:18 25 true that the intended function of a

10:49:21      1 conventional cigarette primarily is to  
10:49:24      2 deliver nicotine?

10:49:27      3                    MR. MUEHLBERGER: Object to  
10:49:27      4 the form.

10:49:28      5                    A. Well, I mean, I think that is  
10:49:30      6 one way to say it. But it also

10:49:33      7 delivers -- I mean, nicotine is not the  
10:49:37      8 largest component delivered. But

10:49:37      9 nicotine is in tobacco, so it's

10:49:37      10 naturally going to be delivered.

10:49:40      11 BY MR. HOPPER:

10:49:40      12 Q. Isn't that the intended  
10:49:44      13 purpose of your company? Haven't there

10:49:45      14 been numerous documents evidencing the  
10:49:49      15 fact that your company believes that a

10:49:50      16 cigarette is a nicotine delivery device

10:49:54      17 and that its intended purpose is to

10:49:57      18 deliver a daily, or a component dose of

10:50:01      19 nicotine to the smoker?

10:50:03      20                    MR. MUEHLBERGER: Object to  
10:50:03      21 the form.

10:50:04      22                    A. Well, I don't know how many  
10:50:05      23 documents there are. But, I mean, if

10:50:08      24 you get down to the nuts and bolts, I

10:50:12      25 wouldn't object to the cigarette

10:50:15 1 delivering nicotine. But it also  
10:50:20 2 delivers five thousand other things. I  
10:50:20 3 will also point out.

10:50:21 4 BY MR. HOPPER:

10:50:21 5 Q. Most of which are toxic and  
10:50:23 6 carcinogenic, true?

10:50:23 7 MR. MUEHLBERGER: Object to  
10:50:25 8 the form.

10:50:25 9 A. Well, there have been  
10:50:26 10 fifty-eight of those five thousand that  
10:50:28 11 have been deemed by the health  
10:50:31 12 community to be carcinogens, either  
10:50:33 13 animal or human.

10:50:38 14 BY MR. HOPPER:

10:50:41 15 Q. What is the function of a  
10:50:43 16 nonconventional cigarette?

10:50:44 17 A. Well, along the same line I  
10:50:46 18 was using. That's a cigarette --  
10:50:48 19 well, that's a cigarette in which the  
10:50:50 20 energy source is not burning the  
10:50:52 21 tobacco in that cigarette, it is using  
10:50:55 22 some other type of device; either a  
10:50:59 23 heater or a piece of charcoal or  
10:51:03 24 something not connected to the tobacco  
10:51:05 25 to heat the system and deliver the

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10:51:08 1 compounds.

10:51:09 2 Q. Is it still considered

10:51:11 3 pyrolysis?

10:51:12 4 A. Yes.

10:51:13 5 Q. Even though it's not burning

10:51:15 6 the tobacco, it's heating it?

10:51:17 7 A. Well, pyrolysis in my

10:51:23 8 definition that I understand, is the

10:51:24 9 thermal decomposition of tobacco.

10:51:27 10 So, how you heat it doesn't

10:51:30 11 really come into that definition.

10:51:30 12 Q. The nonconventional cigarette

10:51:33 13 decomposes tobacco, still?

10:51:33 14 A. Yes.

10:51:34 15 Q. Similar to the conventional?

10:51:36 16 A. Yes. At a lower temperature.

10:51:40 17 Q. Is that the only function of a

10:51:44 18 nonconventional cigarette?

10:51:44 19 MR. MUEHLBERGER: Object to

10:51:45 20 the form.

10:51:48 21 A. Well, I think the

10:51:53 22 nonconventional cigarettes, at least as

10:51:55 23 we have worked on them and I have

10:51:57 24 worked on them, are basically concerned

10:52:05 25 with the lowest possible temperature to

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10:52:08 1 have pyrolysis and deliver smoke  
10:52:11 2 compounds.  
10:52:11 3 BY MR. HOPPER:  
10:52:12 4 Q. Isn't it true that the  
10:52:13 5 nonconventional cigarettes also deliver  
10:52:16 6 nicotine?  
10:52:17 7 MR. MUEHLBERGER: Object to  
10:52:17 8 the form.  
10:52:17 9 A. It's true that the ones I know  
10:52:20 10 about have delivered nicotine.  
10:52:20 11 BY MR. HOPPER:  
10:52:22 12 Q. So, they would also still be  
10:52:24 13 considered a nicotine delivery device,  
10:52:27 14 in your opinion?  
10:52:29 15 MR. MUEHLBERGER: Object to  
10:52:29 16 the form.  
10:52:29 17 A. Well, if I use your language,  
10:52:32 18 there is certainly nicotine delivered  
10:52:35 19 in the smoke. And depending on where  
10:52:38 20 you are coming from, you can say the  
21 smoke has nicotine or it's a nicotine  
22 delivery device.  
10:52:40 23 BY MR. HOPPER:  
10:52:40 24 Q. But that is one of its  
10:52:42 25 intended functions?

Produced by R.R. McCormick

10:52:45 1 MR. MUEHLBERGER: Object to  
10:52:45 2 the form.  
10:52:45 3 A. Well, it's one that I believe  
10:52:46 4 makes it something that smokers tend to  
10:52:49 5 buy, yes.  
10:52:49 6 BY MR. HOPPER:  
10:52:51 7 Q. And need?  
10:52:52 8 MR. MUEHLBERGER: Object to  
10:52:52 9 the form.  
10:52:52 10 A. Nicotine is addictive. So,  
10:52:56 11 there is no question about the fact  
10:52:59 12 that smokers get unhappy without  
10:53:03 13 nicotine.  
10:53:03 14 BY MR. HOPPER:  
10:53:06 15 Q. Can you describe for me what  
10:53:09 16 you mean in your expert report when you  
10:53:11 17 state that you will be testifying  
10:53:16 18 concerning the State of the Art in  
10:53:16 19 cigarette construction? What is the  
10:53:20 20 state of the Art in cigarette  
10:53:20 21 construction?  
10:53:21 22 A. Well, State of the Art means  
10:53:29 23 what new technological advances have  
10:53:29 24 come forth that we can actually use in  
10:53:33 25 cigarettes.

10:53:34 1 Q. So, what would some of those  
10:53:38 2 advances be?  
10:53:38 3 A. Well, it would be in -- there  
10:53:39 4 has been a lot of advances in -- for  
10:53:43 5 instance, we have one in which we put a  
10:53:59 6 few extra bands in a few places on the  
10:53:59 7 cigarette, made out of the cellulose we  
10:53:59 8 make paper, to make the cigarettes more  
10:53:59 9 fire safe.  
10:53:59 10 I mean, that would be, in my  
10:53:59 11 mind, a technological advance.  
10:54:00 12 Q. Essentially, the band acts as  
10:54:06 13 kind of a stop for the burning in a  
10:54:06 14 conventional cigarette or the  
10:54:08 15 decomposition through heating in the  
10:54:11 16 nonconventional cigarette?  
10:54:11 17 MR. MUEHLBERGER: Object to  
10:54:13 18 the form.  
10:54:13 19 A. Well, we use it only in  
10:54:16 20 conventional cigarettes. But  
10:54:20 21 basically, when you get to a band, you  
10:54:20 22 cut the diffusion of oxygen into the  
10:54:22 23 coal, which cuts the combustion down.  
10:54:25 24 And the cigarette, if you drop  
10:54:28 25 it, would tend to go out because you're

10:54:31 1 pulling the extra heat away.

10:54:33 2 Q. Is there anything else you

10:54:36 3 would say that would describe the State

10:54:38 4 of Art in cigarette construction

10:54:40 5 presently?

10:54:41 6 A. Well, we are working very hard

10:54:42 7 to find new materials to increase the

10:54:49 8 surface area of the things we use as

10:54:50 9 filters so that we can remove more and

10:54:53 10 more of the gas phase in cigarettes.

10:54:56 11 Q. Why are you doing that?

10:54:57 12 A. Because in this list that you

10:54:59 13 gave me part of earlier, many of those

10:55:02 14 compounds occur in the gas phase of

10:55:07 15 cigarettes. And one of the things you

10:55:09 16 use to take those out, is a lot of

10:55:15 17 surface area, the main thing being

10:55:18 18 charcoal. Charcoal has a lot of

10:55:19 19 surface areas but there are other

10:55:20 20 things that have a lot.

10:55:22 21 And if you want to remove

10:55:29 22 those things, then that is the kind of

10:55:29 23 State of the Art that we would put into

10:55:30 24 our cigarettes.

10:55:32 25 Q. You have also stated in your

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10:55:35 1 expert opinion that you would testify  
10:55:38 2 as to the usefulness of the Federal  
10:55:43 3 Trade Commission, the FTC's method of  
10:55:43 4 measuring tar and nicotine. Can you  
10:55:46 5 talk about that?

10:55:47 6 A. Yes.

10:55:51 7 I view the FTC's tar and  
10:55:55 8 nicotine measurements as simply picking  
10:55:58 9 one part of a continuum of parameters.

10:56:03 10 And the FTC method involves  
10:56:07 11 taking a puff on a cigarette, a  
10:56:12 12 two-second puff every fifty-eight  
10:56:14 13 seconds, and counting the number of  
10:56:16 14 puffs you get until the cigarette burns  
10:56:19 15 down to the end. Taking it at its  
10:56:23 16 particular flow rate, one thousand  
10:56:25 17 fifty cubic centimeters a minute, which  
10:56:29 18 for two seconds is 35 cc's that are  
10:56:34 19 pulled through every time you take a  
10:56:37 20 puff. And then simply capturing all  
10:56:40 21 the material that comes out on a very  
10:56:46 22 good filter, weighing that, and then  
10:56:46 23 making two measurements -- one for the  
10:56:48 24 amount of nicotine in what you  
10:56:51 25 captured, and one for the amount of

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10:56:56 1 water.

10:56:56 2 And then subtracting from that  
10:56:57 3 total weight the amount of nicotine and  
10:56:59 4 water added together. And everything  
10:57:03 5 else is called tar.

10:57:04 6 That is the present FTC  
10:57:07 7 procedure.

10:57:09 8 Q. What I'm asking you, and what  
10:57:11 9 I can't tell from your statement of  
10:57:14 10 opinion, what I don't know is your  
10:57:16 11 opinion.

10:57:17 12 Is the FTC method useful or  
10:57:21 13 not useful?

10:57:23 14 A. I find it useful myself,  
10:57:24 15 because out of a continuum of all kinds  
10:57:28 16 of parameters I could set down, at  
10:57:35 17 least at one point I can verify or I  
10:57:36 18 can read results that have been  
10:57:39 19 verified by a number of labs that tell  
10:57:41 20 me what that cigarette puts out at that  
10:57:45 21 point.

10:57:48 22 Now, I could have picked  
10:57:47 23 another point here, and one here and  
10:57:48 24 one there and gotten a curve.

10:57:57 25 But I find it valuable to at

Produced by RRTC

10:57:57 1 least have those things controlled at  
10:57:57 2 one point.

10:58:04 3 Q. And yet, the FTC method of  
10:58:04 4 measuring tar and nicotine does not  
10:58:04 5 measure nicotine in the gas phase  
10:58:04 6 whatsoever, does it?

10:58:04 7 MR. MUEHLBERGER: Object to  
10:58:05 8 the form.

10:58:05 9 A. The answer to that is, it  
10:58:09 10 doesn't, but then I will have a comment  
10:58:14 11 that the vast, 98, 99 percent of the  
10:58:17 12 nicotine that exists is in the solid  
10:58:20 13 phase.

10:58:20 14 BY MR. HOPPER:

10:58:21 15 Q. But the smoker takes it in, in  
10:58:23 16 the gas phase, correct?

10:58:27 17 A. No, not to my knowledge.

10:58:27 18 Q. At the point of inhalation?

10:58:30 19 A. Not to my knowledge.

10:58:35 20 Q. You have also stated in your  
10:58:46 21 report that you will testify regarding  
10:58:51 22 the attributes of cigarettes.

10:58:51 23 What is an attribute of  
10:58:52 24 cigarettes?

10:58:57 25 A. An attribute in my mind is

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EUMIPI

10:59:01 1 simply the fact that if you take our  
10:59:06 2 cigarettes -- one may be Marlboro -- to  
10:59:08 3 me it has a certain taste attribute.

10:59:14 4 If you take another one called  
10:59:15 5 Merit, it has a little different.

10:59:17 6 It's kind of the icing on the  
10:59:19 7 cake, in my mind.

10:59:21 8 Q. So, an attribute then really  
10:59:24 9 only refers to taste?

10:59:25 10 A. You also have attributes --  
10:59:27 11 the number of puffs, for instance, you  
10:59:30 12 get on a cigarette in a standard test  
10:59:33 13 is an attribute.

10:59:34 14 Some of our cigarettes have  
10:59:37 15 six puffs, some of them have nine, some  
10:59:41 16 of them have eleven.

10:59:42 17 Q. Would that attribute relate  
10:59:45 18 qualitatively from the standpoint of a  
10:59:48 19 puff to the amount of nicotine a smoker  
10:59:51 20 would take in?

10:59:50 21 MR. MUEHLBERGER: Object to  
10:59:53 22 the form.

10:59:55 23 A. Well, in general you expect  
10:59:58 24 the more puffs you take, if you are  
10:59:61 25 delivering nicotine in each puff, the

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10:59:57 1 more puffs you take, you are going to  
11:00:04 2 accumulate more nicotine.  
11:00:04 3 BY MR. HOPPER:  
11:00:04 4 Q. That's what I mean.  
11:00:06 5 A. Okay.  
11:00:06 6 Q. Is it your testimony then, by  
11:00:10 7 stating this in your report, that the  
11:00:12 8 attributes of cigarettes as to the  
11:00:14 9 taste are the positive things about a  
11:00:14 10 cigarette?  
11:00:20 11 MR. MUEHLBERGER: Object to  
11:00:20 12 the form.  
11:00:20 13 MR. HOPPER: Well, I'm trying  
11:00:21 14 to find out what he's testifying  
11:00:21 15 to.  
11:00:22 16 A. I think the taste of  
11:00:27 17 cigarettes, at least to me, the taste  
11:00:30 18 attributes are a pleasant part of  
11:00:34 19 smoking a cigarette, yes.  
11:00:34 20 BY MR. HOPPER:  
11:00:35 21 Q. Other than that aspect, and  
11:00:39 22 whatever hedonist effect a smoker may  
11:00:44 23 derive; there are no other attributes  
11:00:44 24 about a cigarette.  
11:00:47 25 Technically they're dangerous.

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11:00:48 1 they create signature diseases. How  
11:00:53 2 can you actually even refer to them as  
11:00:57 3 having attributes beyond the taste?

11:01:00 4 MR. MUEHLBERGER: Object to  
11:01:01 5 the form.

11:01:01 6 A. Well, what I was referring to  
11:01:04 7 in our previous discussion, were  
11:01:13 8 attributes depending on how many puffs  
11:01:13 9 you got out of them, how fast they  
11:01:13 10 burned, how much expanded tobacco, how  
11:01:18 11 much ventilation.

11:01:18 12 All those things do get back  
11:01:18 13 to the taste in some way.

11:01:19 14 BY MR. HOPPER:

11:01:19 15 Q. So, you are really talking  
11:01:21 16 about the attributes from a technical  
11:01:25 17 standpoint?

11:01:27 18 A. Well, I was talking actually  
11:01:29 19 about both.

11:01:31 20 Q. Okay. You have also stated  
11:01:31 21 you were going to testify regarding the  
11:01:34 22 nature of the burning cigarette.

11:01:36 23 What is the nature of the  
11:01:37 24 burning cigarette?

11:01:39 25 A. Well, when I described that we

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11:01:42 1 ran a fairly large combustion program  
11:01:47 2 early in the 70's, we were interested  
11:01:49 3 in how hot the cigarette got. We were  
11:01:52 4 interested in going over parameters  
11:01:58 5 that were both below and above the FTC  
11:02:04 6 parameters to see what happened at the  
11:02:06 7 limits of those parameters.

11:02:09 8 We were interested in  
11:02:11 9 understanding what filtration really  
11:02:13 10 did. How did it remove the aerosol  
11:02:16 11 particles from the smoke.

11:02:16 12 We were interested in a lot of  
11:02:22 13 the gases that got supersaturated and  
11:02:22 14 actually condensed like water on a  
11:02:23 15 window.

11:02:24 16 We were interested in all  
11:02:25 17 those physical parameters and how they  
11:02:30 18 changed when we pushed the parameters  
11:02:33 19 that involved those to the limit --  
11:02:35 20 either high or low.

11:02:41 21 Q. You also state in your opinion  
11:02:42 22 that you will testify regarding the  
11:02:44 23 formation of smoke. What is the  
11:02:47 24 formation of smoke?

11:02:49 25 A. Well, the formation of smoke

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11:02:52     1 actually is what you were questioning  
11:02:56     2 me before. It largely comes from  
11:02:57     3 pyrolysis.

11:02:59     4 When you light a cigarette  
11:03:01     5 with either a lighter or a match, you  
11:03:04     6 sweep -- all of the organic material  
11:03:10     7 that's in the tobacco goes off. It  
11:03:10     8 goes off in smoke. And then you end up  
11:03:13     9 with carbon left. And that is what you  
11:03:17     10 really combust to actually derive the  
11:03:20     11 heat that keeps the cigarette moving  
11:03:23     12 back, smouldering.

11:03:23     13 Q. Well, I want to question you  
11:03:27     14 on that because you say that it goes --  
11:03:27     15 with respect to your testimony on the  
11:03:29     16 formation of smoke, that it goes off in  
11:03:29     17 smoke.

11:03:30     18 That really is only the  
11:03:35     19 sidestream you are referring to?  
11:03:35     20 Mainstream smoke actually goes into the  
11:03:38     21 smoker's lungs, correct?

22                 MR. MUEHLBERGER: Object to  
23                 the form.

24                 A. Yes, but what I was --  
25                 BY MR. HOPPER:

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1 Q. Mouth and lungs?

11:03:40 2 A. -- talking about is when I

11:03:40 3 light the cigarette with a match or a

11:03:43 4 lighter, then when I take a puff on the

11:03:45 5 cigarette, you are exactly right, the

11:03:48 6 smoke goes into my mouth, and if I

11:03:52 7 choose to, into my lungs.

11:03:54 8 Q. Along with all those

11:03:57 9 compounds, organic compounds you are

11:03:58 10 referring to?

11:03:58 11 MR. MUEHLBERGER: Object to

11:03:59 12 the form.

11:03:59 13 A. The five thousand compounds,

11:04:02 14 yes, they go along.

11:04:02 15 BY MR. HOPPER:

11:04:14 16 Q. How many of those five

11:04:16 17 thousand compounds do you believe are

11:04:20 18 carcinogenic?

11:04:20 19 MR. MUEHLBERGER: Object to

11:04:21 20 the form.

11:04:23 21 A. Well, I believe the ones that

11:04:25 22 the health community has brought

11:04:29 23 forward.

11:04:29 24 MR. HOPPER: Excuse me, I'm

11:04:29 25 going to object to nonresponsive.

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11:04:29 1 BY MR. HOPPER:  
11:04:29 2 Q. How many do you believe are  
11:04:31 3 carcinogenic, not what the public  
11:04:35 4 health community believes.  
11:04:35 5 MR. MUEHLBERGER: Objection.  
11:04:38 6 I believe he was answering, and you  
11:04:41 7 cut him off, so I object to form.  
11:04:43 8 MR. HOPPER: I wanted to cut  
11:04:43 9 him off at that point because I  
11:04:43 10 wanted to get my objection in as  
11:04:43 11 being nonresponsive on the record.  
11:04:43 12 MR. MUEHLBERGER: Well, I  
11:04:45 13 think he was responding --  
11:04:45 14 BY MR. HOPPER:  
11:04:46 15 Q. I don't want to know what the  
11:04:46 16 public health community believes,  
11:04:49 17 Doctor. With all due respect, I want  
11:04:49 18 to know what you believe are the  
11:04:52 19 carcinogenic compounds contained in  
11:04:54 20 those five thousand organic compounds.  
11:04:59 21 MR. MUEHLBERGER: Object to  
11:05:00 22 the form. And again, to your  
11:05:02 23 interrupting his answer.  
11:05:02 24 BY MR. HOPPER:  
11:05:02 25 Q. Do you understand the

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11:05:03 1 question?  
11:05:03 2 A. I understand the question.  
11:05:03 3 And my answer is I don't know, because  
11:05:06 4 I don't even know what all the five  
11:05:11 5 thousand compounds are.  
11:05:16 6 Q. Okay. You have moved up the  
11:05:17 7 ladder, you have moved up the ranks,  
11:05:20 8 you are in one of top positions, you  
11:05:22 9 have testified here that you understand  
11:05:24 10 the function, the construction, the  
11:05:26 11 components of conventional,  
11:05:32 12 nonconventional cigarettes, you  
11:05:32 13 understand the State of the Art of  
11:05:33 14 cigarette construction, you understand  
11:05:34 15 the FTC method of measuring, you  
11:05:36 16 understand the attributes of  
11:05:37 17 cigarettes, the nature of the burning  
11:05:38 18 cigarette, the formation of smoke, the  
11:05:42 19 composition of smoke, the combustion  
11:05:42 20 process, pyrolysis, filtration,  
11:05:46 21 ventilation, cigarette paper, types of  
11:05:46 22 tobacco used in cigarettes; and out of  
11:05:49 23 all that, you still don't know after  
11:05:51 24 all these years you have been working  
11:05:54 25 at Philip Morris becoming a top

Produced by R.R.I.C

11:05:56 1 research scientist, what are the  
11:06:00 2 carcinogenic compounds in that smoke or  
11:06:02 3 in that burning tobacco?  
11:06:02 4 MR. MUEHLBERGER: Object to  
11:06:02 5 the form.  
11:06:04 6 BY MR. HOPPER:  
11:06:04 7 Q. I'm appalled, if you can't sit  
11:06:07 8 here and answer that question for me.  
11:06:07 9 MR. MUEHLBERGER: Object to  
11:06:11 10 the form. I don't even know if you  
11:06:11 11 are asking a question now.  
11:06:11 12 A. I'm sorry to disappoint you --  
11:06:11 13 Q. Really.  
11:06:12 14 A. -- but the only ones I know  
11:06:19 15 are the ones that have been tested.  
11:06:19 16 BY MR. HOPPER:  
11:06:19 17 Q. Okay.  
11:06:19 18 A. And I don't even know what the  
11:06:19 19 others are.  
11:06:20 20 Q. I see. Okay.  
11:06:23 21 But you are reading the book  
11:06:26 22 beside your bedside, correct? And what  
11:06:31 23 is the name of that book?  
11:06:31 24 MR. MUEHLBERGER: Object to  
11:06:32 25 the form.

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11:06:32 1 A. The Dose is the Poison. I'm  
11:06:44 2 also reading a Tom Clancy novel.  
11:06:44 3 Q. Can't smoke on submarines, can  
11:06:44 4 you?  
11:06:45 5 MR. MUEHLBERGER: Object to  
11:06:45 6 the form.  
11:06:46 7 A. I think not.  
11:06:51 8 Q. You have also stated in your  
11:06:55 9 opinion that you will be testifying to  
11:06:57 10 the Jury about the effect on the  
11:07:00 11 formation and the yield of smoke  
11:07:07 12 constituents.  
11:07:08 13 What do you mean by the effect  
11:07:07 14 on the formation of smoke constituents?  
11:07:10 15 A. What I mean there is, one of  
11:07:14 16 the details of heat breaking down  
11:07:17 17 tobacco polymers and actually forming  
11:07:20 18 individual compounds, and how that  
11:07:26 19 happens both at low temperature and  
11:07:26 20 high temperature.  
11:07:28 21 Q. And what do you mean when you  
11:07:29 22 say you intend to testify about the  
11:07:31 23 effect on the yield of smoke  
11:07:34 24 constituents?  
11:07:36 25 A. What I mean there is, that if

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11:07:37      1 I can limit the temperature of the  
11:07:41      2 cigarette below five hundred degrees  
11:07:43      3 centigrade, I can reduce enormously a  
11:07:43      4 lot of the high temperature compounds  
11:07:49      5 that form, like, for instance,  
11:07:49      6 polyaromatic hydrocarbons.

11:08:41      7 Q. Dr. Lilly, you have submitted,  
11:08:44      8 along with your statement of opinion in  
11:08:53      9 your expert report, a list of citations  
11:08:55      10 of authority upon which you rely,  
11:08:59      11 which I have introduced as Lilly  
11:09:04      12 Exhibit Number 4, I believe. Is that  
11:09:04      13 correct, Madam Court Reporter? Yes is  
11:09:08      14 her answer.

11:09:34      15 In this list of citations of  
11:09:52      16 authority, why did you choose these  
11:09:52      17 particular citations?

11:09:52      18 A. I don't know.

11:09:54      19 Q. You just thought they felt  
11:09:54      20 good to you, or what?

11:09:57      21 MR. MUEHLBERGER: Object to  
11:09:57      22 the form.

11:09:58      23 A. Let me look at them, because I  
11:10:01      24 haven't looked at those in a long  
11:10:04      25 time.

Produced by R.J. REYNOLDS

11:10:04 1 BY MR. HOPPER:  
11:10:14 2 Q. I'll be happy to.  
11:10:14 3 (Tendering document.)  
11:10:14 4 MR. HOPPER: Actually, so that  
11:10:23 5 we're following proper procedure  
11:10:23 6 here and following your counsel's  
11:10:23 7 request, I should probably give you  
11:10:24 8 the actual document. Correct, Jim?  
11:10:29 9 MR. MUEHLBERGER: Thank you.  
11:10:29 10 MR. HOPPER: Thank you.  
11:10:44 11 THE WITNESS: Yes, thank you  
11:10:44 12 for giving me this.  
11:10:44 13 BY MR. HOPPER:  
11:10:47 14 Q. Sure.  
11:10:47 15 A. These are documents that  
11:10:51 16 describe us developing the banded paper  
11:10:56 17 for ignition propensity, all of the  
11:11:00 18 work that we did on what we call the  
11:11:06 19 Beta or the Accord, nonconventional  
11:11:08 20 cigarette, the work we did on other  
11:11:11 21 nonconventional cigarettes, and the  
11:11:14 22 work we did on taking nicotine out of  
11:11:18 23 tobacco.  
11:11:19 24 Q. I think your counsel has  
11:11:22 25 indicated that he has brought along all

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11:11:25 1 the documents.  
11:11:26 2 I think it might be worthwhile  
11:11:29 3 to mark those as a part -- or submit  
11:11:33 4 those as a part of Exhibit 4.  
11:11:43 5 I think we could do it that  
11:11:43 6 way rather than having to mark them  
11:11:43 7 separately or to mark them as a batch  
11:11:43 8 document.  
11:11:43 9 That way we can make those  
11:11:45 10 actually a part of the record here at  
11:11:52 11 the deposition.  
11:12:08 12 On the first page, Doctor,  
11:12:11 13 referring to -- and I think maybe the  
11:12:15 14 best way to do this is by date. You've  
11:12:18 15 shown 10/30/96, and you've referred to  
11:12:22 16 a description of UTS. What does UTS  
11:12:24 17 stand for?  
11:12:27 18 A. That stands for, "ultra trade  
11:12:31 19 secret."  
11:12:39 20 Q. And what does that mean?  
11:12:39 21 A. Well, it means that these were  
11:12:39 22 documents that were deemed to be  
11:12:45 23 competitively sensitive, maybe  
11:12:46 24 describing lots of the products that  
11:12:49 25 hasn't been done, or this type of

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11:12:50 1 thing.

11:12:50 2 Q. I see. And so, the document

11:12:51 3 itself describes an issue, or describes

11:12:55 4 something that you relied upon but

11:12:57 5 rather than to list that here under the

11:13:00 6 description, you just chose to use

11:13:09 7 ultra trade secret?

11:13:09 8 A. Well, I actually didn't make

11:13:09 9 that call, but there are a number of

11:13:10 10 things that I've worked on, obviously,

11:13:13 11 that haven't been marketed yet.

11:13:15 12 It's a competitive issue.

11:13:24 13 Q. Do you know if any of these

11:13:33 14 documents, or if the work presented in

11:13:31 15 these documents have been

11:13:33 16 peer-reviewed?

11:13:39 17 A. I'm looking through them.

11:13:42 18 Q. Take your time.

11:13:44 19 A. Okay.

11:14:25 20 Well, these are largely

11:14:25 21 internal company documents describing

11:14:25 22 the progress of internal projects.

11:14:29 23 There are some things that

11:14:31 24 were published in the Society of

11:14:33 25 Toxicology.

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11:14:34 1 Q. Can you point me to those?  
11:14:37 2 A. There is one right back at the  
11:14:39 3 end.  
11:14:40 4 Q. What is the date?  
11:14:42 5 A. 1998.  
11:14:45 6 Q. Okay. There are several  
11:14:46 7 there. Is that the last one, 3/2/98?  
11:14:51 8 A. Yes. Those were actually  
11:14:55 9 published as abstracts and given as  
11:14:59 10 papers at that meeting.  
11:15:02 11 Q. Were they given by you?  
11:15:04 12 A. No. None of those was given  
11:15:06 13 by me, no, sir.  
11:15:08 14 Q. Do you know what that  
11:15:10 15 publication states?  
11:15:13 16 A. That is the toxicology set of  
11:15:19 17 experiments run at our testing facility  
11:15:22 18 in Germany, describing the Ames and  
11:15:29 19 cytotoxicity testing of the Accord  
11:15:32 20 cigarette.  
11:15:36 21 Q. Is that similar to the  
11:15:36 22 document with the date 2/1/94, "Invitro  
11:15:42 23 Cytotoxicity of Mainstream Smoke,  
11:15:42 24 Particulate Matter in Mainstream  
11:15:45 25 Smoke"?

Produced by FRTIC

11:15:45 1 A. Let me find that one.  
11:15:46 2 Q. That is on the third page,  
11:15:47 3 about the middle of the page.  
11:15:50 4 MR. MUEHLBERGER: Object to  
11:15:51 5 the form.  
11:15:52 6 A. That data was actually given  
11:15:54 7 in there, in that publication.  
11:15:54 8 BY MR. HOPPER:  
11:15:59 9 Q. Okay.  
11:15:59 10 A. This is an earlier set of  
11:16:01 11 experiments.  
11:16:07 12 Q. So, the answer to my question  
11:16:09 13 about these documents being  
11:16:16 14 peer-reviewed, I take it none of them  
11:16:17 15 have been?  
11:16:17 16 A. To my knowledge, none of these  
11:16:20 17 have been peer-reviewed. But they were  
11:16:22 18 not intended to be. They were not  
11:16:22 19 being submitted to a peer-review  
11:16:26 20 journal.  
11:17:38 21 Q. Earlier today, Doctor, you  
11:17:40 22 referred to a Surgeon General's report  
11:17:44 23 when I was questioning you about  
11:17:47 24 lowering tar. You've testified in  
11:17:50 25 other litigation that you had seen the

PRODUCED BY R.R. BURKE

11:17:58 1 1981 Surgeon General's report; is that  
11:18:03 2 true?

11:18:03 3 A. Yes.

11:18:04 4 Q. Are you familiar with that  
11:18:05 5 report and the point that it makes  
11:18:07 6 regarding the fact there is no safe  
11:18:10 7 cigarette?

11:18:10 8 MR. MUEHLBERGER: Object to  
11:18:11 9 the form.

11:18:11 10 A. I'm familiar with the general  
11:18:12 11 point. I'm not ready to actually make  
11:18:17 12 quotes out of it.

11:18:17 13 BY MR. HOPPER:

11:18:18 14 Q. Well, I understand that. But  
11:18:20 15 you would agree that seeking a lower  
11:18:23 16 tar objective, or lowering the tar in a  
11:18:26 17 cigarette does not create a safe  
11:18:29 18 cigarette?

11:18:29 19 MR. MUEHLBERGER: Object to  
11:18:30 20 the form.

11:18:30 21 A. Oh, I agree. I don't know  
11:18:32 22 whether it does or not and I would be  
11:18:35 23 -- I would think that that is a long  
11:18:38 24 experiment that you wouldn't answer  
11:18:41 25 just by doing that.

Produced by RJK  
FBI - BOSTON

11:18:43 1 Q. When you state in your opinion  
11:18:47 2 and report that you will testify about  
11:18:49 3 the method prescribed by the FTC for  
11:18:54 4 measuring tar and nicotine smoke yields  
11:18:57 5 from cigarettes, what are you getting  
11:18:59 6 at there?  
11:19:00 7 What are you going to actually  
11:19:03 8 testify to about that?  
11:19:04 9 A. Well, I was going to testify  
11:19:06 10 about the method they used, which I  
11:19:08 11 think I did some description a few  
11:19:12 12 minutes ago. Meaning they pick  
11:19:14 13 parameters out of a continuum of  
11:19:17 14 parameters, and they test at that  
11:19:19 15 protocol.  
11:19:21 16 I have some knowledge of what  
11:19:24 17 happens if you go higher than that in  
11:19:27 18 smoke volume, or if you take more  
11:19:30 19 puffs.  
11:19:31 20 And actually, we are beginning  
11:19:33 21 to do that up in Boston with the Health  
11:19:37 22 Department, by doubling -- taking  
11:19:38 23 twice as many puffs and doubling the  
11:19:42 24 volume.  
11:19:43 25 And certainly, everything goes

11:19:44 1 up and that's another point on the  
11:19:48 2 continuum.

11:19:51 3 Q. You are testifying here in  
11:19:52 4 this report that the FTC method  
11:19:56 5 provides a standardized brand  
11:20:09 6 comparison method. What do you mean by  
11:20:09 7 that?

11:20:09 8 A. Well, what I mean is, I think  
11:20:09 9 it's important to have -- when you  
11:20:09 10 have got a product that, depending on  
11:20:09 11 how I smoke it or you smoke it or  
11:20:12 12 somebody else smokes it, you can get a  
11:20:22 13 continuum of what you get out of it,  
11:20:22 14 then I think it's important to at least  
11:20:22 15 give consumers and even scientists an  
11:20:25 16 idea, if you set those parameters and  
11:20:25 17 hold them to a particular set, how  
11:20:25 18 these things actually stack up.

11:20:30 19 Now, I personally would like  
11:20:30 20 to have a curve over all volumes and  
11:20:35 21 all numbers of puffs. But that is a  
11:20:38 22 lot of data.

11:20:42 23 Q. Now, your company does quite a  
11:20:46 24 few brand comparison marketing tests.  
11:20:46 25 correct ?

ERIC Acronym

11:20:52 1 MR. MUEHLBERGER: Object to  
11:20:52 2 the form.  
11:20:52 3 A. The answer is yes.  
11:20:52 4 BY MR. HOPPER:  
11:20:54 5 Q. You like to know which brands  
11:20:57 6 seem to be selling more than others?  
11:20:58 7 A. Well, not particularly me, but  
11:21:01 8 certainly the people who run marketing  
11:21:04 9 and sales.  
11:21:05 10 Q. No, I said your company does.  
11:21:05 11 A. Oh, I'm sorry.  
11:21:07 12 Q. Not you or the R & D  
11:21:09 13 department.  
11:21:09 14 A. The answer is yes.  
11:21:11 15 Q. Thank you.  
11:21:53 16 Do you know what brand  
11:21:54 17 switching analysis is?  
11:21:54 18 MR. MUEHLBERGER: Object to  
11:21:59 19 the form.  
11:21:59 20 A. Vaguely.  
11:21:59 21 BY MR. HOPPER:  
11:22:00 22 Q. That's something your  
11:22:01 23 marketing people do, again?  
11:22:01 24 MR. MUEHLBERGER: Object to  
11:22:05 25 the form.

INTERVIEW  
Conducted by  
John R. Hockenberry

11:22:05 1 A. Yes, that's the only time I  
11:22:07 2 have heard of it, is through marketing.  
11:22:07 3 BY MR. HOPPER:  
11:22:10 4 Q. They like to measure what  
11:22:21 5 might motivate a smoker to switch  
11:22:21 6 brands? Essentially, that's what  
11:22:21 7 that's about?  
11:22:21 8 A. Well, I think they also call  
11:22:21 9 smokers to see if they have switched  
11:22:21 10 brands. And then I think they ask  
11:22:21 11 them, well, why did you switch brands.  
11:22:23 12 I think that is the way it's  
11:22:26 13 done.  
11:22:26 14 Q. Are you familiar with the POL?  
11:22:29 15 A. Again, vaguely. Product  
11:22:33 16 Opinion Lab?  
11:22:33 17 Q. Yes.  
11:22:34 18 A. That's how we send new  
11:22:38 19 cigarettes out to a set of consumers to  
11:22:40 20 have them come back and say whether  
11:22:43 21 they like it or not.  
11:22:47 22 Q. You also track brand loyalty;  
11:22:52 23 is that correct?  
11:22:54 24 A. I'm a little more fuzzy on  
11:22:56 25 that one.

11:22:57 1 Q. Are you familiar with the fact  
11:23:01 2 that your company, through its  
11:23:01 3 marketing efforts, track brand loyalty  
11:23:07 4 to determine what smokers tend to smoke  
5 the most?

6 MR. MUEHLBERGER: Object to  
7 the form.

8 BY MR. HOPPER:

9 Q. Which brands?

10 MR. MUEHLBERGER: Object to  
11 the form.

11:23:10 12 A. Well, I would just assume --  
11:23:10 13 Is that part of what we do in tracking?  
11:23:14 14 I guess the overall tracking  
11:23:16 15 thing, that would certainly be part of  
11:23:19 16 it.

17 BY MR. HOPPER:

18 Q. Has Philip Morris ever  
19 conducted any brand-specific  
20 epidemiologic testing in its R & D  
21 Department?

22 MR. MUEHLBERGER: Object to  
23 the form.

24 A. Not to my knowledge.

25 BY MR. HOPPER:

Produced by RRK

11:24:08 1 Q. It hasn't, has it?

11:24:08 2 MR. MUEHLBERGER: Object to

11:24:08 3 the form.

11:24:08 4 A. Not to my knowledge. I would

11:24:08 5 have to answer, no, not to my

11:24:08 6 knowledge.

11:24:08 7 BY MR. HOPPER:

11:24:11 8 Q. Do you know why that is?

11:24:14 9 A. No. I couldn't give you a

11:24:16 10 good answer on why that is.

11:24:19 11 Q. Given all that data that you

11:24:22 12 have on brand loyalty and on brand

11:24:29 13 switching and on brand choice, isn't it

11:24:31 14 possible that you could conduct those

11:24:33 15 kinds of epidemiological tests?

11:24:33 16 MR. MUEHLBERGER: Object to

11:24:38 17 the form.

11:24:38 18 A. Yeah, we carry out a huge

11:24:40 19 number of biological tests, of course.

11:24:46 20 We are talking about carrying

11:24:46 21 out some very big exposure studies that

11:24:51 22 I guess you might call epidemiology,

11:24:55 23 because you really -- it's one thing

11:24:55 24 to know all the chemistry, it's another

11:24:55 25 thing to know how everyone smokes who

11:24:59        1     does that.

11:24:59        2     BY MR. HOPPER:

11:24:59        3       Q.     But that is something you have

11:25:02        4     only begun to do recently, correct?

11:25:04        5       A.     I think we're talking over the

11:25:05        6     last couple of years.

11:25:06        7       Q.     So, for forty or so years, you

11:25:09        8     never did any of those biological-type

11:25:09        9     tests, correct? Or any epidemiological

11:25:09        10    tests?

11:25:09        11      MR. MUEHLBERGER: Object to

11:25:09        12    the form.

11:25:09        13      A.     We did a huge number of

11:25:11        14    biological tests.

11:25:11        15      BY MR. HOPPER:

11:25:14        16      Q.     But you shipped all that off

11:25:15        17    to INBIFO and locked it up, too, didn't

11:25:24        18    you?

11:25:24        19      MR. MUEHLBERGER: Object to

11:25:24        20    the form.

11:25:24        21      A.     Well, we shipped it off to

11:25:24        22    INBIFO.

11:25:24        23      I'm not sure I would agree

11:25:26        24    with locking it up.

11:25:32        25      VIDEOGRAPHER: We are going

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produced by R.J. REED

11:25:33 1 off the record at 11:25. This  
11:25:37 2 marks the end of tape one.  
11:25:48 3 (FOLLOWING A BRIEF RECESS, THE  
11:25:48 4 FOLLOWING PROCEEDINGS WERE HAD:)  
11:25:48 5 VIDEOPRAYER: We're back on  
11:35:10 6 the record at 11:34.  
11:35:10 7 MR. HOPPER: For the record,  
11:35:12 8 Counsel for the defendants has  
11:35:17 9 provided an updated C.V. of Dr.  
11:35:23 10 Lilly, which has added publications  
11:35:27 11 since 1998, through the year 2000.  
11:35:30 12 And I think what we would  
11:35:34 13 suggest, Counsel, is that we would  
11:35:35 14 append this to Exhibit Number Four,  
11:35:43 15 I think it is, whichever exhibit  
16 16 that it is, we'll append it to  
17 17 that.  
18 18 We need to be specific about  
19 19 it, though.  
20 20 (Off record.)  
21 21 MR. MUEHLBERGER: Just for  
22 22 the record, I think you may have  
23 23 referred to me as counsel for the  
24 24 defendants. I'm appearing on  
25 25 behalf of Philip Morris.

Produced by  
ERIC

1 MR. HOPPER: Oh, yes, excuse  
2 me.  
3 It is Lilly Exhibit Number 3  
4 is the curriculum vitae.  
5 So, for record, what we will  
6 do is append this to, and make it a  
7 part of Exhibit Number Three.  
8 It's essentially the same as  
9 Exhibit Number Three, but it has  
10 added an updated list of Dr.  
11 Lilly's publications and  
12 presentations since 1998.  
13 BY MR. HOPPER:  
14 Q. Is there anything else  
15 remarkably different about the C.V.?  
16 A. If I could borrow your copy,  
17 or borrow this copy.  
18 I added that I was a member of  
19 an organizing symposium in 1999 for an  
20 international meeting. That brought it  
21 up to 1999.  
22 And the only other thing are  
23 the presentations, publications and a  
24 couple of patents.  
25 MR. HOPPER: What we will do

11:37:52 1 is, we'll mark this Exhibit 3-A and  
11:37:53 2 include it with Exhibit Number 3.

11:37:53 3 (Whereupon, the document was  
11:37:53 4 marked as Exhibit No. 3-A for  
11:38:41 5 Identification.)

11:38:41 6 BY MR. HOPPER:

11:38:41 7 Q. Dr. Lilly, if I didn't know  
11:38:43 8 better, I would think you were a  
11:38:47 9 metallurgist. It seems you have done a  
11:38:51 10 tremendous amount of work with metals  
11:38:53 11 and the molecular processes and  
11:38:56 12 structure of metals; is that true?

11:38:59 13 A. That's true. Although, I  
11:39:01 14 would say metallurgy is part of  
11:39:03 15 physics, but that is my bias.

11:39:09 16 That's true.

11:40:17 17 Q. Dr. Lilly, one of the things  
11:40:22 18 that I notice and that I'm aware of in  
11:40:27 19 your C.V., and that you also testified  
11:40:31 20 to in your opinion, is that apparently  
11:40:39 21 a large part of your job now and in the  
11:40:44 22 past few years, has been that of  
11:40:47 23 tracking down, and tracking and keeping  
11:40:51 24 in touch with new technologies; is that  
11:40:57 25 true?

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Reviewed by TRAC

11:40:58 1 A. Yes, that's true.  
11:40:59 2 Q. Presumably as that relates to  
11:40:59 3 your business and the manufacture of  
11:41:02 4 cigarettes, correct?  
11:41:02 5 A. That's correct, yes.  
11:41:16 6 Q. What kind of things are  
11:41:21 7 involved -- what kind of  
11:41:24 8 responsibilities do you have as you are  
11:41:26 9 tracking new technologies? What does  
11:41:29 10 that work take up?  
11:41:31 11 MR. MUEHLBERGER: Object to  
11:41:32 12 the form.  
11:41:33 13 A. Well, we have a very large  
11:41:36 14 goal at Philip Morris R & D that we  
11:41:40 15 have had for a long time, but more of a  
11:41:48 16 full court press these days, to take  
11:41:50 17 compounds out of our products, take  
11:41:50 18 chemical compounds out.  
11:41:52 19 And the toolbox that we  
11:41:56 20 presently have, that you had me go over  
11:42:00 21 maybe an hour ago, isn't going to do  
11:42:02 22 it. So, we have to find new materials  
11:42:04 23 in order to do that. And that is what  
11:42:09 24 I spend a lot of my time doing, finding  
11:42:10 25 these new materials.

11:42:10 1 BY MR. HOPPER:

11:42:12 2 Q. But you weren't doing that in

11:42:14 3 1965, were you?

11:42:14 4 MR. MUEHLBERGER: Object to

11:42:14 5 the form.

11:42:16 6 BY MR. HOPPER:

11:42:16 7 Q. When you were came to the

11:42:16 8 company?

11:42:20 9 A. Well, you know, it's

11:42:21 10 interesting that I was trying to find

11:42:21 11 plastics that held charges so I could

11:42:25 12 get an electric field out of them.

11:42:25 13 So, in a way, yes, I was doing

11:42:26 14 that.

11:42:26 15 Q. Indirectly?

11:42:27 16 A. Kind of indirectly.

11:42:30 17 Q. Not prodigiously?

11:42:30 18 MR. MUEHLBERGER: Object to

11:42:33 19 the form.

11:42:33 20 A. I would agree with that.

11:42:33 21 BY MR. HOPPER:

11:42:35 22 Q. And not following any

11:42:37 23 corporate mandate to do so?

11:42:37 24 MR. MUEHLBERGER: Object to

11:42:43 25 the form.

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FBI - NEW YORK

RECORDED BY RECORDED BY

11:42:43 1 A. Well, a corporate mandate to  
11:42:43 2 see if we could electrostatically  
11:42:45 3 filter, but actually, I didn't pay much  
11:42:49 4 attention to that. I went and looked  
11:42:52 5 for things.

11:42:52 6 BY MR. HOPPER:

11:42:52 7 Q. I notice on your C.V., also,  
11:42:56 8 where you have a topic, "Additional  
11:42:56 9 Business-related Topics," that you have  
11:42:58 10 been a member of the Philip Morris  
11:43:01 11 company's Technical Synergy Steering  
11:43:07 12 Committee, Emerging Technologies Core  
11:43:08 13 Team, you have been involved as a  
11:43:10 14 Coordinator of Technical Synergy  
11:43:15 15 Symposium, Technical Chairman of the  
11:43:17 16 Fifth Philip Morris Science Symposium,  
11:43:22 17 Chairman of the Philip Morris Visiting  
11:43:22 18 Scientists Program, Organizer of  
11:43:23 19 Visiting Lecturer Series.

11:43:23 20 It looks to me like you have  
11:43:27 21 done a lot of work with colleagues and  
11:43:29 22 in a collegial setting with other  
11:43:34 23 scientists and other technical  
11:43:36 24 colleagues; is that's correct?

11:43:38 25 MR. MUEHLBERGER: Object to

RECORDED BY R.D.

11:43:39 1 the form.  
11:43:39 2 A. Yes, that's correct.  
11:43:39 3 BY MR. HOPPER:  
11:43:41 4 Q. Have any of those been from  
11:43:42 5 the public health community?  
11:43:45 6 MR. MUEHLBERGER: Object to  
11:43:46 7 the form.  
11:43:50 8 A. I'm thinking. Not in general.  
11:44:00 9 Most of the people on the corporate  
11:44:00 10 front, the Kraft, Miller Beer, the  
11:44:04 11 international people in Kraft, from the  
11:44:10 12 science symposium standpoint, they were  
11:44:17 13 basically pure scientists, not  
11:44:17 14 particularly -- a wide range, but I'm  
11:44:17 15 trying to think whether -- we may have  
11:44:19 16 had a couple of people from the health  
11:44:23 17 community, those people that had worked  
11:44:24 18 on computer tomography and this type of  
11:44:29 19 thing. But the biggest thing was, that  
11:44:33 20 they were like Nobel prize winners.  
11:44:33 21 BY MR. HOPPER:  
11:44:37 22 Q. Over all of the years that you  
11:44:38 23 have been in R & D at Philip Morris,  
11:44:42 24 have you ever organized or invited in  
11:44:42 25 high-ranking persons from the public

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for demand by RTR

11:44:44 1 health community to discuss the health  
11:44:46 2 effects of smoking?  
11:44:46 3 MR. MUEHLBERGER: Object to  
11:44:47 4 the form.  
11:44:47 5 A. I have not done so, no.  
11:44:47 6 BY MR. HOPPER:  
11:44:49 7 Q. Has anyone?  
11:44:49 8 MR. MUEHLBERGER: Object to  
11:44:51 9 the form.  
11:44:51 10 A. I think more recently you will  
11:44:54 11 find that in Dr. Solana's group, they  
11:44:58 12 are spending a lot of time talking to  
11:45:01 13 people in the public health arena.  
11:45:01 14 BY MR. HOPPER:  
11:45:05 15 Q. And that has occurred only in  
11:45:07 16 the last year or so, correct?  
11:45:09 17 A. I would say --  
11:45:09 18 MR. MUEHLBERGER: Object to  
11:45:10 19 the form.  
11:45:10 20 A. -- in the last two-and-a-half  
11:45:11 21 years.  
11:45:11 22 BY MR. HOPPER:  
11:45:12 23 Q. And you personally have never  
11:45:14 24 organized or attempted to organize  
11:45:17 25 anyone from the public health community

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11:45:30 1 to discuss --  
11:45:30 2 MR. HOPPER: Are you asking  
11:45:33 3 for me to stop?  
11:45:33 4 MR. MUEHLBERGER: Oh, no,  
5 sorry. I was asking for him to  
6 wait until the question was  
7 finished.  
8 MR. HOPPER: Oh.  
9 MR. MUEHLBERGER: I'm sorry  
10 to interrupt.  
11 MR. HOPPER: Should we just go  
12 off the record?  
13 MR. MUEHLBERGER: If you would  
14 like, yes.  
15 VIDEOGRAPHER: Off the record  
16 at 11:45.  
17 (Off record.)  
18 VIDEOGRAPHER: We are back on  
19 the record at 11:46.  
20 MR. HOPPER: Would you read  
21 back the last question, please,  
22 Madam Court Reporter.  
23 (Reporter read: And you  
24 personally have never organized or  
25 attempted to organize anyone from

Produced by R.E.C  
Reviewed by R.E.C

11:45:17      1        the public health community to  
11:45:31      2        discuss --)  
11:45:31      3        BY MR. HOPPER:  
11:46:56      4        Q.       The health effects of smoking?  
11:46:56      5        MR. MUEHLBERGER: Object to  
11:46:58      6        the form.  
11:46:58      7        A.       I have not done so, no.  
11:46:58      8        BY MR. HOPPER:  
11:47:01      9        Q.       Has anyone in R & D, over the  
11:47:04      10       years, organized or attempted to  
11:47:07      11       organize the public health community to  
11:47:10      12       discuss the various carcinogenic  
11:47:14      13       compounds found in tobacco smoke?  
11:47:17      14       MR. MUEHLBERGER: Object to  
11:47:18      15       the form.  
11:47:18      16       A.       I don't remember anything at  
11:47:20      17       R & D, and I can't speak for the people  
11:47:24      18       who are in Europe who may done so. But  
11:47:28      19       I'm talking about U.S. R & D.  
11:47:28      20       BY MR. HOPPER:  
11:47:35      21       Q.       You have never been a part of  
11:47:35      22       any symposia or any meetings or  
11:47:37      23       conferences at Philip Morris or that  
11:47:38      24       Philip Morris has sponsored on any of  
11:47:40      25       these kinds of issues or topics --

Produced by  
ERIC

11:47:40 1 MR. MUEHLBERGER: Object to  
11:47:40 2 the form.  
11:47:43 3 BY MR. HOPPER:  
11:47:43 4 Q. -- concerning the health  
11:47:45 5 effects of smoking or the carcinogenic  
11:47:49 6 compounds?  
11:47:49 7 MR. MUEHLBERGER: Object to  
11:47:50 8 the form.  
11:47:50 9 A. I have not.  
11:47:51 10 I wouldn't really guarantee  
11:47:53 11 that other people at Philip Morris  
11:47:55 12 haven't gone to those things. But I  
11:47:56 13 can answer it for myself, no.  
11:47:58 14 BY MR. HOPPER:  
11:47:59 15 Q. You don't know of any that  
11:48:01 16 have been organized?  
11:48:03 17 A. It doesn't come to mind.  
11:48:07 18 Q. To your knowledge, have any of  
11:48:10 19 the former Vice-Presidents of R & D,  
11:48:19 20 Max Hauserman, or Ken Houghton, or  
11:48:20 21 Cathy Ellis, or Jack Nelson or  
11:48:22 22 currently Urs Nyffeler, ever attempted  
11:48:36 23 to organize a symposia where inquiry  
11:48:36 24 was made into the health effects of  
11:48:36 25 smoking?

Employment by industry

- 11:48:36 1 MR. MUEHLBERGER: Object to  
11:48:38 2 the form.  
11:48:38 3 A. I will answer no, I don't  
11:48:39 4 think so. But I'm doing that on what I  
11:48:44 5 know.  
11:48:44 6 It they have, then maybe. But  
11:48:47 7 I don't know of any.  
11:48:47 8 BY MR. HOPPER:  
11:48:54 9 Q. Have you ever conferred with  
11:48:56 10 epidemiologists regarding the health  
11:49:00 11 effects of smoking?  
11:49:04 12 MR. MUEHLBERGER: Object to  
11:49:04 13 the form.  
11:49:04 14 A. I haven't conferred with them.  
11:49:07 15 I mean, certainly I talk to  
11:49:10 16 people like Solana and Carchman who go  
11:49:16 17 to meetings like that, but no, I  
11:49:19 18 haven't done that.  
11:49:19 19 BY MR. HOPPER:  
11:49:51 20 Q. You also state in your opinion  
11:49:54 21 that you intend to testify regarding  
11:50:00 22 the use of ammonia compounds in  
11:50:03 23 cigarettes; is that true?  
11:50:06 24 A. That's true.  
11:50:08 25 Q. Yet you don't describe or say

Produced by RJK

11:50:10 1 anything in your report about that,  
11:50:13 2 other than you intend to testify about  
11:50:17 3 that. What, in fact, is your  
11:50:19 4 testimony?

11:50:20 5 A. Well, my testimony would be

11:50:23 6 that I think it's very hard to get  
11:50:25 7 ammonia on an aerosol particle that  
11:50:31 8 tends to be somewhat hotter than its  
11:50:31 9 surroundings because of heat of  
11:50:31 10 condensation.

11:50:41 11 And Number One, it's hard to  
11:50:41 12 get it on there because of volatility.

11:50:44 13 It's also hard with all the acetic  
11:50:52 14 materials in the particle to change its  
11:50:52 15 apparent PH. And I say apparent  
11:50:53 16 because I don't know how you would  
11:50:54 17 measure the PH.

11:50:56 18 That's what I'm talking about.

11:50:57 19 Q. And yet, Philip Morris has  
11:50:58 20 used ammonium bicarbonate and other  
11:51:01 21 types of ammoniated products in its  
11:51:04 22 reconstituted tobacco process, correct?

11:51:04 23 MR. MUEHLBERGER: Object to  
11:51:08 24 the form.

11:51:08 25 A. Well, we have certainly used

11:51:09 1 ammonia compounds in reconstituted  
11:51:20 2 tobacco, and in our ART process; that's  
11:51:20 3 correct.

11:52:04 4 BY MR. HOPPER:

11:52:04 5 Q. Now, it's my understanding you  
11:52:05 6 have been involved for some time in  
11:52:10 7 safe cigarette research; is that true?

11:52:15 8 MR. MUEHLBERGER: Object to  
11:52:15 9 the form.

11:52:16 10 A. Well, I have been involved in  
11:52:18 11 ways that I think may reduce the risk  
11:52:21 12 of cigarettes.

11:52:23 13 I mean, we talked earlier  
11:52:26 14 about is the cigarette safe or not, and  
11:52:28 15 I sure can't answer one way or the  
11:52:32 16 other on that. But I have been  
11:52:35 17 involved, certainly, in trying to take  
11:52:38 18 compounds out of the smoke.

11:52:38 19 BY MR. HOPPER:

11:52:40 20 Q. Well, you did say -- in fact,  
11:52:40 21 when I asked you the question earlier  
11:52:41 22 if there was a safe cigarette, you said  
11:52:42 23 no, there isn't.

11:52:44 24 A. Well, that is still my belief,  
11:52:49 25 that there isn't.

ERIC  
Produced by ERIC

Produced by R.J.T.C

11:52:49      1      Q.      Okay. Just so we are clear  
11:52:50      2      for the Jury, that's your testimony?  
11:52:52      3      A.      Yes.  
11:52:53      4      Q.      Can you tell me what the Beta,  
11:53:03      5      Delta and Sigma projects were?  
11:53:03      6      A.      Yes.  
11:53:03      7      We talked earlier about  
11:53:04      8      nonconventional cigarettes, ones in  
11:53:06      9      which you don't use the tobacco itself  
11:53:09      10     burning to supply all the heat.  
11:53:13      11     And we had basically three  
11:53:17      12     fairly large programs in that area.  
11:53:20      13     One we called Delta. And it was really  
11:53:23      14     Delta Two. We had a smaller version of  
11:53:30      15     that in the middle-'70s that I was  
11:53:41      16     involved in for a while but not very  
11:53:41      17     long.  
11:53:41      18     And then we had a big effort  
11:53:42      19     when R.J. Reynolds brought out their  
11:53:44      20     Premier cigarette, that we called Delta  
11:53:44      21     Two.  
11:53:49      22     The Sigma part is simply the  
11:53:49      23     fact that rather than use a hunk of  
11:53:50      24     charcoal to burn and supply the heat  
11:53:54      25     that we did in Delta, we used a more

Produced by R.J.R.

11:53:57 1 sophisticated heat source that gave no  
11:54:02 2 carbon monoxide. It was called iron  
11:54:03 3 nitride.  
11:54:03 4 And then Beta was our  
11:54:07 5 electrical cigarette that --  
11:54:11 6 Q. Nitrate?  
11:54:12 7 A. Nitride, N-I-T-R-I-D-E.  
11:54:12 8 Q. Okay.  
11:54:18 9 A. -- is our cigarettes that we  
11:54:20 10 actually decided go with, and that is  
11:54:25 11 the electrical cigarette that we have  
11:54:29 12 on the market in Richmond and Osaka and  
11:54:30 13 we are spending a lot of effort to improve  
11:54:30 14 and expand.  
11:54:31 15 Q. And that is the Accord?  
11:54:32 16 A. That would be the Accord, yes.  
11:54:35 17 Q. Were you involved in the  
11:54:37 18 conceptual development and research for  
11:55:00 19 Beta and the Accord product?  
11:55:00 20 A. Yes.  
11:55:00 21 MR. MUEHLBERGER: Object to  
11:55:00 22 the form.  
11:55:00 23 A. Yes, sir.  
11:55:00 24 BY MR. HOPPER:  
11:55:00 25 Q. And Accord still operates as a

Produced by R.R.T.C  
HUMPHREY

11:55:00 1 nicotine delivery device, doesn't it?  
11:55:00 2 MR. MUEHLBERGER: Object to  
11:55:00 3 the form.  
11:55:00 4 A. If you are asking me is there  
11:55:00 5 nicotine in the smoke of Accord, my  
11:55:02 6 answer is going to be yes.  
11:55:02 7 Q. No, I'm asking you if it's a  
11:55:04 8 nicotine delivery device.  
11:55:04 9 MR. MUEHLBERGER: Object to  
11:55:07 10 the form.  
11:55:07 11 A. And we've talked about it.  
11:55:07 12 It depends -- it delivers nicotine.  
11:55:09 13 BY MR. HOPPER:  
11:55:10 14 Q. Thank you.  
11:55:12 15 And you were involved in  
11:55:14 16 something called the table group,  
11:55:16 17 correct, and that was a part of Beta?  
11:55:18 18 And the workup of Beta into Accord?  
11:55:23 19 A. The answer is yes, and I was  
11:55:25 20 involved in the table group. And we  
11:55:29 21 started working on an electrical  
11:55:32 22 cigarette in 1988, in the laboratory.  
11:55:39 23 And we were far enough along  
11:55:41 24 in 1990, that we needed some guidance  
11:55:45 25 by the company on, you know, how to

11:55:48 1 really commercialize it, should we go  
11:55:52 2 off-site and set up a separate type of  
11:55:55 3 deal, or should we do it inside, you  
11:56:07 4 know, our manufacturing and R & D here.

11:56:07 5 And in that regard, the table  
11:56:09 6 group was put together to study that  
11:56:12 7 issue and report back to the upper  
11:56:13 8 management. And I was a member of  
11:56:16 9 that.

11:56:16 10 Q. When you first started working  
11:56:18 11 on Beta and Accord, did you believe  
11:56:23 12 that you could actually produce a safer  
11:56:26 13 cigarette?

11:56:27 14 MR. MUEHLBERGER: Object to  
11:56:28 15 the form.

11:56:30 16 A. Well, we believed that we  
11:56:32 17 could reduce enormously the chemical  
11:56:39 18 compounds coming out in the smoke. I  
11:56:42 19 mean, that is what we believed because  
11:56:45 20 we had seen evidence of that in the  
11:56:51 21 Sigma and the Delta.

11:56:51 22 I'll speak for myself; that I  
11:56:54 23 was kind of driven in that product to,  
11:56:58 24 certainly, in my mind, because of  
11:57:00 25 reducing the chemicals, reduce the

Proprietary  
Agreement

Proprietary  
Information

11:57:03 1 risk. But as we said, you know, who  
11:57:06 2 knows if there is ever going to be a  
11:57:09 3 safe cigarette.  
11:57:09 4 BY MR. HOPPER:  
11:57:15 5 Q. So, you were a true believer  
11:57:16 6 in it?  
11:57:17 7 A. I still do.  
11:57:18 8 Q. You advocate for it?  
11:57:21 9 A. I still do, yes.  
11:57:22 10 Q. Within the company?  
11:57:29 11 A. Absolutely.  
11:57:45 12 MR. MUEHLBERGER: Belated  
11:57:50 13 objection to, "true believer."  
11:57:54 14 If you could just give a  
11:57:55 15 slight pause so I could interpose  
11:58:01 16 any objection, Doctor, it would  
11:58:03 17 help the court reporter and the  
11:58:06 18 record.  
11:58:10 19 THE WITNESS: Okay.  
11:58:10 20 BY MR. HOPPER:  
11:58:10 21 Q. Why did the R & D Department  
11:58:11 22 conceptualize and develop the Beta  
11:58:15 23 process and the Accord, in the first  
11:58:19 24 place?  
11:58:20 25 MR. MUEHLBERGER: Object to

Produced by READER'S DIGEST

11:58:20 1 the form.  
11:58:21 2 A. Well, you've got to remember  
11:58:21 3 that we were already working on  
11:58:23 4 nonconventional cigarettes.  
11:58:26 5 The Premier had been announced  
11:58:29 6 by the Reynolds people, and they gave  
11:58:32 7 us the feeling that they were going to  
11:58:36 8 be turning it out in great amounts in a  
11:58:40 9 few months. And so, we had a lot of  
11:58:42 10 people working on a competitive-type of  
11:58:42 11 thing.  
11:58:50 12 And we were having a lot of  
11:58:53 13 trouble controlling the temperature  
11:58:53 14 that the tobacco got. And that was  
11:58:58 15 using charcoal. I mean, sometimes it  
11:58:58 16 was great and sometimes you set the  
11:59:00 17 tobacco on fire. And that is a very  
11:59:04 18 expensive way to operate a  
11:59:07 19 nonconventional cigarette.  
11:59:08 20 And we came -- a few of us  
11:59:10 21 come to the conclusion, the only way  
11:59:12 22 you were ever going to control energy  
11:59:15 23 is do it electrically. And so, we set  
11:59:23 24 some people aside to work on that.  
11:59:23 25 And that came along pretty

11:59:25 1 fast. So, at the end of the day, that  
11:59:25 2 is really what we decided to put more  
11:59:28 3 effort on.

11:59:28 4 BY MR. HOPPER:

11:59:28 5 Q. The Next cigarette project had  
11:59:31 6 preceded Accord; true?

11:59:41 7 A. Yes.

11:59:41 8 The nicotine extraction, the  
11:59:41 9 denic. Yeah, we ended the denic, at  
11:59:42 10 least the process development in  
11:59:45 11 Germany, in July of '87. And we  
11:59:48 12 started off in September of '87, on the  
11:59:52 13 nonconventional cigarette work.

11:59:54 14 Q. Isn't it true that Next failed  
11:59:57 15 because people are addicted to

11:59:59 16 nicotine, and they won't purchase a  
12:00:02 17 cigarette unless it has nicotine in it?

12:00:02 18 MR. MUEHLBERGER: Object to  
12:00:02 19 the form.

12:00:05 20 BY MR. HOPPER:

12:00:08 21 Q. Isn't that what your marketing  
12:00:10 22 showed?

12:00:10 23 MR. MUEHLBERGER: Object to  
12:00:10 24 the form.

12:00:10 25 A. Well, there is still a lot of

Transcribed by RJK  
Approved by RJK

12:00:10 1 discussion to this day about it.  
12:00:13 2 I mean, that is one of the  
12:00:14 3 discussion items you just answered for  
12:00:16 4 me.  
12:00:17 5 The other one is that without  
12:00:19 6 nicotine, tobacco doesn't taste very  
12:00:23 7 good. And that cigarette didn't taste  
12:00:25 8 very good.  
12:00:28 9 And so, there is still some  
12:00:28 10 discussion.  
12:00:28 11 And the other parts -- I don't  
12:00:29 12 want to leave anything hanging -- is  
12:00:39 13 the process of supercritical  
12:00:39 14 extraction took some key things out.  
12:00:39 15 And those were the three  
12:00:39 16 things -- no nicotine, took some key  
12:00:42 17 things out, and tobacco without  
12:00:45 18 nicotine simply tastes bad.  
12:00:48 19 I mean, those were the three  
12:00:50 20 things.  
12:00:50 21 BY MR. HOPPER:  
12:00:53 22 Q. Isn't it true that when Next  
12:00:53 23 failed and you realized you were going  
12:00:56 24 to have to continue to deliver  
12:00:57 25 nicotine, that you were then faced with

12:01:01 1 these grave health concerns and you had  
12:01:04 2 to develop a safer cigarette in order  
12:01:09 3 to stay in business?

12:01:09 4 MR. MUEHLBERGER: Object to  
12:01:10 5 the form.

12:01:10 6 A. I don't remember any of that.

12:01:10 7 BY MR. HOPPER:

12:01:11 8 Q. You don't think there was any  
12:01:13 9 economic or financial motivation behind  
12:01:19 10 the development of Beta and Accord at  
12:01:25 11 all, then?

12:01:25 12 MR. MUEHLBERGER: Object to  
12:01:25 13 the form.

12:01:25 14 A. No. I think the motivation --  
12:01:26 15 at least, unless someone kept me out of  
12:01:27 16 the loop, was that we were going to  
12:01:28 17 develop -- we had started out  
12:01:33 18 developing something to compete with  
12:01:34 19 Premier, that had a very large  
12:01:36 20 publication of biological-type testing,  
12:01:40 21 and we simply found we couldn't do it  
12:01:45 22 with putting hunks of charcoal in, so  
12:01:49 23 we decided to go with a more controlled  
12:01:52 24 system, the electrical one.

12:01:52 25 That's what I remember, having

RECORDED BY RECORDER

12:01:52 1 been in it, I mean, like every day,  
12:02:00 2 unfortunately, and every weekend.

12:02:00 3 BY MR. HOPPER:

12:02:00 4 Q. But what motivated you was  
12:02:00 5 based on the fact that as far back as  
12:02:03 6 the 1950s, and certainly even in the  
12:02:06 7 early-'60s, Philip Morris had extensive  
12:02:10 8 knowledge that carcinogens and these  
12:02:15 9 various other compounds, when heated to  
12:02:16 10 high temperature, created a very  
12:02:19 11 dangerous product; correct?

12:02:21 12 MR. MUEHLBERGER: Object to  
12:02:21 13 the form.

12:02:22 14 A. Well, I don't think I  
12:02:23 15 recognized that when I came walking in  
12:02:27 16 the door of the company in '65, but I  
12:02:29 17 certainly recognized we needed to  
12:02:32 18 change cigarettes at the time we are  
12:02:35 19 talking about when we were working on  
12:02:37 20 Accord.

12:02:37 21 BY MR. HOPPER:

12:02:37 22 Q. You have referred to something  
12:02:40 23 known as, "general reduction." What is  
12:02:43 24 general reduction?

12:02:43 25 A. General reduction -- when I

Produced by Agip

12:02:48 1 first came to the company, the Marlboro  
12:02:49 2 cigarette was probably twenty-five tar  
12:02:52 3 and it is presently fifteen, and we  
12:02:55 4 take it on down. They have some at  
12:02:59 5 five and six milligrams.

12:03:02 6 The techniques that you use to  
12:03:06 7 accomplish that, you are not doing  
12:03:06 8 specific reduction, you are not  
12:03:09 9 reaching in and taking out a compound,  
12:03:09 10 you are having to reduce everything at  
12:03:11 11 one time. I call that general  
12:03:12 12 reduction.

12:03:13 13 Q. It's impossible to do, isn't  
12:03:16 14 it?

12:03:17 15 A. I'm looking puzzled because I  
12:03:21 16 don't quite understand your question.

12:03:23 17 Q. Well, isn't it impossible to  
12:03:25 18 reduce all of the compounds in a  
12:03:28 19 cigarette without effectively not  
12:03:30 20 having a cigarette to smoke?

12:03:33 21 MR. MUEHLBERGER: Object to  
12:03:34 22 the form.

12:03:36 23 A. Oh, are you talking about  
12:03:42 24 ascemtolically approaching zero tar?

25 BY MR. HOPPER:

Produced by R.R.T.C

1 Q. Yes.

2 I'm talking about that, plus  
3 I'm talking about the removal of the  
4 various compounds that we discussed  
5 earlier.

6 A. Well, Number One, I agree. If  
7 you ascemtolically approach zero, there  
8 is no one that will buy it.

9 Number Two, I do disagree that  
10 some of the new science out there makes  
11 it impossible to reduce compounds. I  
12 mean, we have a large effort on that  
13 today.

14 Q. But that has only been in  
15 place, again, for the last  
16 year-and-a-half or so?

17 MR. MUEHLBERGER: Object to  
18 the form.

19 A. Well, I would argue with  
20 Accord, we started that in 1988. And  
21 we really put money into it to  
22 commercialize it in '93.

23 BY MR. HOPPER:

24 Q. Did that take up selective  
25 reduction?

RECORDED BY Ag Demand

12:04:32 1 A. No, but it took up -- it  
12:04:32 2 reduced in a very large manner all of  
12:04:38 3 the fifty-eight compounds mentioned by  
12:04:44 4 some of the health community, starting  
12:04:47 5 with WHO and the Hoffmann list.  
12:04:50 6 Q. And what is selective  
12:04:52 7 reduction?  
12:04:53 8 A. Well, now, selective reduction  
12:04:55 9 is exactly what we have been talking  
12:04:58 10 about.  
12:04:59 11 Suppose there is a compound  
12:05:02 12 there I want to take out completely,  
12:05:04 13 and suppose that compound is acrolein,  
12:05:06 14 which is an irritating compound.  
12:05:12 15 There are ways to approach  
12:05:14 16 acrolein using chemical reactions, that  
12:05:21 17 you can remove it. I mean, part of the  
12:05:21 18 chemical reaction has to be tagging a  
12:05:25 19 molecule onto charcoal or something, or  
12:05:26 20 using a transition metal. And those  
12:05:30 21 are the type of things that have come  
12:05:31 22 to the fore in the last few years.  
12:05:39 23 But I will bet you, nano  
12:05:39 24 technology, we didn't read in the paper  
12:05:40 25 about five years ago, either. And

PROCESSED BY HUMPHREY

12:05:42 1 those are the kinds of techniques we  
12:05:45 2 are going to do that.  
12:05:51 3 Q. What is a carcinogen? Tell  
12:05:51 4 the Jury what a carcinogen is in your  
12:05:54 5 understanding.  
12:05:54 6 MR. MUEHLBERGER: Object to  
12:06:00 7 the form.  
12:06:00 8 A. Well, in my understanding, a  
12:06:00 9 carcinogen is a chemical compound that  
12:06:00 10 reacts at a certain organ in the body  
12:06:03 11 to produce cancer cells.  
12:06:03 12 BY MR. HOPPER:  
12:06:07 13 Q. Tumorous growth?  
12:06:12 14 MR. MUEHLBERGER: Object to  
12:06:12 15 the form, if that's a question.  
12:06:12 16 A. Well, I'm not an expert on it  
12:06:12 17 but I would say cancer cells generally  
12:06:15 18 lead to tumors. And they grow  
12:06:18 19 unbounded.  
12:06:18 20 BY MR. HOPPER:  
12:06:19 21 Q. And your company was aware of  
12:06:21 22 over four hundred compounds found in  
12:06:28 23 both mainstream and sidestream smoke,  
12:06:29 24 as far back as the '50s and '60s that  
12:06:34 25 it created these various carcinogens;

Produced by RITE

- 12:06:39 1 correct?
- 12:06:39 2 MR. MUEHLBERGER: Object to
- 12:06:39 3 the form.
- 12:06:43 4 A. Well, the company was aware
- 12:06:43 5 that -- not to -- I mean, there four
- 12:06:43 6 to five thousand compounds in smoke;
- 12:06:43 7 many of them probably to this day
- 12:06:56 8 haven't been fully characterized.
- 12:06:56 9 There are known animal and
- 12:06:56 10 -- known in animal carcinogens that we
- 12:06:56 11 certainly know about today. And I
- 12:06:57 12 think I read that we knew about some of
- 12:06:59 13 them way back.
- 12:06:59 14 BY MR. HOPPER:
- 12:07:02 15 Q. Isn't it true that Drs.
- 12:07:02 16 Davley and Robbs; I believe you
- 12:07:05 17 mentioned Ernie Robbs earlier today, at
- 12:07:06 18 PM did reach on nitrosamines as far
- 12:07:11 19 back as 1963, correct?
- 12:07:11 20 MR. MUEHLBERGER: Object to
- 12:07:16 21 the form.
- 12:07:16 22 A. Well, I said actually, PAHs.
- 12:07:19 23 They may have worked on nitrosamines
- 12:07:22 24 too, I don't know. But PAHs certainly.
- 12:08:28 25 BY MR. HOPPER:

Proprietary  
Information

12:08:28 1 Q. To your knowledge, isn't it  
12:08:30 2 true that carcinogens are found in  
12:08:33 3 practically ever class of compounds in  
12:08:41 4 smoke, in cigarette smoke?

12:08:41 5 MR. MUEHLBERGER: Object to  
12:08:41 6 the form.

12:08:41 7 A. I don't know. I have seen  
12:08:43 8 some classes, but they are normally the  
12:08:50 9 list that the health community puts  
12:08:50 10 out.

12:08:51 11 I guess I don't know the  
12:08:51 12 answer to that question, but they are  
12:08:53 13 in many of the classes that we just  
12:08:56 14 went over.

12:08:58 15 I mean, they are in the gas  
12:09:00 16 phase and a lot in the solids that also  
12:09:06 17 exist.

12:09:17 18 MR. MUEHLBERGER: What is your  
12:09:20 19 preference for lunch?

12:09:23 20 MR. HOPPER: Let me get  
12:09:26 21 through this phase.

12:09:28 22 BY MR. HOPPER:

12:09:17 23 Q. Earlier you have referenced  
12:09:20 24 polycyclic aromatic hydrocarbons; are they  
12:09:28 25 present in classes of smoke?

Produced by RICOH IMAGING

- 12:09:28 1 A. Yes.
- 12:09:29 2 Q. And would that be such as
- 12:09:30 3 benzo(a) and benzo(e) pyrenes?
- 12:09:37 4 A. Yes.
- 12:09:37 5 Q. And are they carcinogenic?
- 12:09:37 6 MR. MUEHLBERGER: Object to
- 12:09:38 7 the form.
- 12:09:38 8 A. They are certainly either
- 12:09:41 9 animal or human carcinogens.
- 12:09:41 10 BY MR. HOPPER:
- 12:09:44 11 Q. And they are found in your
- 12:09:46 12 products, correct?
- 12:09:46 13 MR. MUEHLBERGER: Object to
- 12:09:47 14 the form.
- 12:09:47 15 A. They are found in smoke.
- 12:09:47 16 BY MR. HOPPER:
- 12:09:49 17 Q. What your product is intended
- 12:09:51 18 to be used for, correct?
- 12:09:53 19 A. That's correct.
- 12:09:54 20 Q. What about the aza-arenes?
- 12:09:54 21 That would include the nitrosamines.
- 12:09:54 22 MR. MUEHLBERGER: Object to
- 12:09:57 23 the form.
- 12:09:57 24 A. Aza-arenes are in the smoke of
- 12:10:01 25 cigarettes.

Produced by JRC

12:10:01 1 BY MR. HOPPER:

12:10:02 2 Q. And there are tobacco-specific

12:10:05 3 nitrosamines, too, correct; the NNKs

12:10:08 4 and NNNs?

12:10:11 5 A. Yes.

12:10:12 6 And there is also a lot of

12:10:14 7 controversy over whether they are human

12:10:14 8 carcinogens. They're certainly animal

12:10:15 9 carcinogens. But they are in smoke.

12:10:22 10 Q. What about aromatic amines --

12:10:29 11 the naphthylamines -- 2-naphthylamines,

12:10:30 12 4-aminobiphenyls. The phenyls, are

12:10:32 13 they present?

12:10:32 14 MR. MUEHLBERGER: Object to

12:10:34 15 the form.

12:10:34 16 A. Aminobiphenyl is in smoke.

12:10:34 17 BY MR. HOPPER:

12:10:37 18 Q. And are they known to be

12:10:44 19 human carcinogens?

12:10:44 20 MR. MUEHLBERGER: Object to

12:10:44 21 the form.

12:10:44 22 A. I'm hesitating because I don't

12:10:45 23 know whether they are human carcinogens

12:10:47 24 or thought to be humans carcinogens;

12:10:50 25 but every one you said are animal

Produced by R.R.I.T.C

- 12:10:54 1 carcinogens.  
12:10:54 2 BY MR. HOPPER:  
12:10:54 3 Q. What about aldehydes?  
12:10:54 4 MR. MUEHLBERGER: Object to  
12:10:54 5 the form.  
12:10:55 6 BY MR. HOPPER:  
12:10:55 7 Q. Formaldehydes found there?  
12:10:57 8 A. Formaldehyde is in the smoke  
12:11:02 9 of cigarettes, yes.  
12:11:02 10 Q. And what about benzene and  
12:11:03 11 vinyl chloride?  
12:11:03 12 MR. MUEHLBERGER: Object to  
12:11:05 13 the form.  
12:11:05 14 A. Yes, they are in smoke.  
12:11:05 \*  
12:11:05 15 BY MR. HOPPER:  
12:11:08 16 Q. What about inorganic  
12:11:12 17 compounds, such as arsenic and chromium  
12:11:19 18 and polonium-210?  
12:11:19 19 MR. MUEHLBERGER: Object to  
12:11:19 20 the form.  
12:11:19 21 BY MR. HOPPER:  
12:11:19 22 Q. Were they found?  
12:11:19 23 A. Well, I don't know about  
12:11:19 24 polonium-210. That depends on the  
12:11:22 25 people who make the bombs, in my mind.

INTERVIEWED BY POLYGRAPHIC

- 12:11:33 1 I think there is a lot of  
12:11:33 2 trace metals in smoke that come from  
12:11:33 3 the soil. And I think arsenic and  
12:11:33 4 chromium would be two of them.
- 12:11:33 5 Q. And they are found to be human  
12:11:36 6 carcinogens; correct?
- 12:11:36 7 MR. MUEHLBERGER: Object to  
12:11:38 8 the form.
- 12:11:38 9 A. Well, certainly, chromium is a  
12:11:38 10 human carcinogen and arsenic is a human  
12:11:38 11 carcinogen.
- 12:11:39 12 BY MR. HOPPER:
- 12:11:39 13 Q. And other compounds such as  
12:11:41 14 zinc and cadmium and carbon monoxide  
12:11:43 15 and CO<sub>2</sub> or all found in smoke; correct?
- 12:11:48 16 MR. MUEHLBERGER: Object to  
12:11:53 17 the form.
- 12:12:13 18 A. Your statement was correct.
- 12:12:13 19 BY MR. HOPPER:
- 12:12:13 20 Q. And they are known to be --  
12:12:13 21 they are known to have pathologies and  
12:12:13 22 to be found to be carcinogenic,  
12:12:13 23 correct?
- 12:12:13 24 MR. MUEHLBERGER: Object to  
12:12:13 25 the form.

Produced by TRAC

12:12:13 1 A. Well, I don't know if anyone  
12:12:13 2 has found zinc to be a carcinogen.  
12:12:13 3 BY MR. HOPPER:  
12:12:13 4 Q. What about teratogenic?  
12:12:16 5 A. I don't know.  
12:12:16 6 MR. MUEHLBERGER: Object to  
12:12:16 7 the form.  
12:12:16 8 BY MR. HOPPER:  
12:12:16 9 Q. Mutagenic?  
12:12:16 10 MR. MUEHLBERGER: Object to  
12:12:16 11 the form.  
12:12:18 12 A. Again, I don't know.  
12:12:21 13 Carbon dioxide is certainly  
12:12:22 14 not a carcinogen.  
12:12:22 15 BY MR. HOPPER:  
12:12:25 16 Q. Has Philip Morris ever  
12:12:33 17 publically discussed biological  
12:12:33 18 research it has done on any of these  
12:12:33 19 compounds, with the public?  
12:12:33 20 MR. MUEHLBERGER: Object to  
12:12:35 21 the form.  
12:12:35 22 A. Well, there certainly have  
12:12:36 23 been a late of papers coming out  
12:12:39 24 recently.  
12:12:41 25 Your question is probably

Produced by R.R.T.C  
FBI - NEW YORK

12:12:42 1 based on what came out before. And I  
12:12:46 2 just don't know what has been discussed  
12:12:48 3 out of the INBIFO lab or in that group.  
12:12:49 4 BY MR. HOPPER:  
12:12:50 5 Q. In the 1950s, did Philip  
12:12:55 6 Morris make a public statement that  
12:12:55 7 these various tarcinogenic, and  
12:12:56 8 teratogenic, and mutagenetic compounds  
12:12:56 9 we just discussed were found in their  
12:12:59 10 products?  
12:12:59 11 MR. MUEHLBERGER: Object to  
12:13:01 12 the form.  
12:13:02 13 A. I wasn't around here but I  
12:13:04 14 think no.  
12:13:04 15 BY MR. HOPPER:  
12:13:04 16 Q. What about in the 1960s when  
12:13:08 17 you were around?  
12:13:08 18 MR. MUEHLBERGER: Object to  
12:13:08 19 the form.  
12:13:08 20 BY MR. HOPPER:  
12:13:08 21 Q. Same question.  
12:13:11 22 A. I don't remember saying it  
12:13:12 23 but, of course, that is just me  
12:13:14 24 talking.  
12:13:15 25 Q. To your knowledge, a public

12:13:18 1 statement has never been made that  
12:13:20 2 these carcinogenic compounds were found  
12:13:26 3 in Philip Morris' products?

12:13:25 4 MR. MUEHLBERGER: Object to  
12:13:25 5 the form.

12:13:26 6 A. I haven't seen it but I don't  
12:13:30 7 know, you know, everything that has  
12:13:31 8 gone out from Philip Morris.

12:13:31 9 BY MR. HOPPER:

12:13:32 10 Q. And they didn't make a public  
12:13:35 11 statement in the same vein in the 1970s  
12:13:38 12 or 80s, either, they did?

12:13:39 13 MR. MUEHLBERGER: Object to  
12:13:41 14 the form.

12:13:41 15 A. Sure did recently by putting  
12:13:43 16 put it on the website.

12:13:43 17 BY MR. HOPPER:

12:13:43 18 Q. Well, but that's in the late  
12:13:48 19 90s, after we've sued you.

12:13:48 20 A. Yeah.

12:13:48 21 Q. But you certainly didn't do it  
12:13:48 22 in the '40s or '50s or '60s or '70s or  
12:13:54 23 '80s, did you?

12:13:54 24 MR. MUEHLBERGER: Object to  
12:13:55 25 the form.

Produced by RTF

12:13:55 1 A. Not to my knowledge; but we  
12:13:58 2 have been working to take those  
12:14:00 3 compounds out for longer than you  
12:14:08 4 think.

12:14:08 5 BY MR. HOPPER:

12:14:08 6 Q. And you have never put a list  
12:14:08 7 of these various carcinogenic compounds  
12:14:08 8 on the packs of your products, either,  
12:14:08 9 have you?

12:14:09 10 MR. MUEHLBERGER: Object to  
12:14:10 11 the form.

12:14:11 12 A. No.

12:14:11 13 BY MR. HOPPER:

12:14:12 14 Q. And the only reason there is a  
12:14:15 15 warning label on there is because the  
12:14:17 16 Federal Government made you put that  
12:14:19 17 warning label on there, correct?

12:14:19 18 MR. MUEHLBERGER: Object to  
12:14:23 19 the form.

12:14:23 20 A. Well, they certainly, you  
12:14:24 21 know, made us. I don't know our tenure  
12:14:32 22 at the time that was happening, where  
12:14:32 23 we were coming from.

12:14:32 24 BY MR. HOPPER:

12:14:32 25 Q. You never volunteered to put

Produced by Reveal Software

12:14:33 1 it on there, though, did you?  
12:14:33 2 MR. MUEHLBERGER: Object to  
12:14:35 3 the form.  
12:14:35 4 A. I don't know. I was in a lab,  
12:14:37 5 not dealing with the people.  
12:14:37 6 BY MR. HOPPER:  
12:14:42 7 Q. What are the benefits of  
12:14:42 8 smoking?  
12:14:42 9 MR. MUEHLBERGER: Object to  
12:14:42 10 the form.  
12:14:42 11 A. I mean, I have to give you a  
12:14:44 12 personal statement there.  
12:14:44 13 BY MR. HOPPER:  
12:14:55 14 Q. Is there an objective benefit.  
12:14:55 15 MR. MUEHLBERGER: Object to  
12:14:55 16 the form.  
12:14:55 17 A. I mean, the benefit to me is  
12:14:55 18 Number one, if I'm in a boring meeting,  
12:14:57 19 it helps me concentrate on the meeting.  
12:15:01 20 And Number Two, when I'm doing  
12:15:11 21 a lot of math and stuff at home or at  
12:15:11 22 the laboratory, it's occasionally nice  
12:15:11 23 to take a break -- and particularly at  
12:15:11 24 the laboratory -- and walk out and  
12:15:14 25 smoke.

Produced by RRRC

12:15:14 1 BY MR. HOPPER:  
12:15:14 2 Q. What the risks of smoking?  
12:15:14 3 MR. MUEHLBERGER: Object to  
12:15:16 4 the form.  
12:15:16 5 A. Well, I think the risks are  
12:15:18 6 what we have been talking today.  
12:15:20 7 The risks are the compounds in  
12:15:23 8 smoke cause disease.  
12:15:25 9 I think that is the risk of  
12:15:27 10 smoking.  
12:15:27 11 BY MR. HOPPER:  
12:15:28 12 Q. Do the benefits outweigh the  
12:15:30 13 risks?  
12:15:32 14 MR. MUEHLBERGER: Object to  
12:15:33 15 the form.  
12:15:33 16 A. I think it's an adult  
12:15:37 17 decision.  
12:15:37 18 BY MR. HOPPER:  
12:15:37 19 Q. What do you believe?  
12:15:37 20 MR. MUEHLBERGER: Same  
12:15:37 21 objection.  
12:15:37 22 A. Well, I think that I certainly  
12:15:38 23 try to moderate my smoking, but I  
12:15:42 24 understand the benefits. It has been  
12:15:44 25 helpful to me in my work.

Produced by RTRIC

12:15:44 1 BY MR. HOPPER:

12:15:47 2 Q. As an expert witness that has

12:15:54 3 worked at Philip Morris for thirty-five

12:15:54 4 years -- I believe I have the number

12:15:54 5 correct -- do the benefits outweigh the

12:15:54 6 risk?

12:15:56 7 MR. MUEHLBERGER: Object to

12:15:56 8 the form.

12:15:59 9 BY MR. HOPPER:

12:15:59 10 Q. I'm asking you as a scientist,

12:15:59 11 now.

12:15:59 12 MR. MUEHLBERGER: Same

12:16:00 13 objection.

12:16:00 14 A. As a scientist, I would have

12:16:03 15 to say that I would like to see the

12:16:05 16 risk enormously reduced.

12:16:05 17 BY MR. HOPPER:

12:16:09 18 Q. I know that is what you would

12:16:11 19 like to say; I'm saying you a question

12:16:11 20 specifically --

12:16:13 21 A. And I'm saying that because I

12:16:15 22 think that in order to balance your

12:16:16 23 equation, I think we have to reduce the

12:16:23 24 risk.

12:16:23 25 Q. So, the risks outweigh the

Produced by TEC  
TECHNICAL EXPERTS

- 12:16:23 1 benefits?
- 12:16:23 2 MR. MUEHLBERGER: Object to
- 12:16:23 3 the form.
- 12:16:23 4 A. That is where I have my
- 12:16:26 5 present thinking.
- 12:16:31 6 MR. MUEHLBERGER: Are we at
- 7 a point where we can take a lunch
- 8 break now, Randy?
- 12:16:31 9 MR. HOPPER: No, I'm not quite
- 10 finished, Jim. I'll be through
- 11 soon..
- 12:16:31 12 BY MR. HOPPER:
- 12:16:43 13 Q. Do you have any idea how much
- 14 money has been spent on R & D at Philip
- 12:16:46 15 Morris since you arrived?
- 12:16:48 16 Approximately how much is
- 12:16:49 17 spent on an annual basis?
- 12:16:49 18 MR. MUEHLBERGER: Object to
- 12:16:49 19 the form.
- 12:16:52 20 BY MR. HOPPER:
- 12:16:52 21 Q. I'm sure that has increased
- 12:16:54 22 over the years, but I wonder --
- 12:16:55 23 A. Well, I know what we are
- 12:16:56 24 spending this year and next year.
- 12:17:02 25 Q. What are you spending?

Produced by FRTIC

12:17:02 1 A. We're spending in the order of  
12:17:03 2 two hundred million dollars.  
12:17:06 3 You know, I don't really know  
12:17:07 4 what the sum is for thirty-five years.  
12:17:10 5 I mean, our budget has been up, you  
12:17:12 6 know, over a hundred million for a  
12:17:16 7 while.  
12:17:16 8 Q. Do you know how much money has  
12:17:16 9 been spent on marketing, promotions and  
12:17:17 10 advertising to sell cigarettes over the  
12:17:20 11 last 20 years or so?  
12:17:20 12 MR. MUEHLBERGER: Object to  
12:17:22 13 the form.  
12:17:22 14 A. I'm sure it's quite high.  
12:17:22 15 BY MR. HOPPER:  
12:17:24 16 Q. Is it more than has been spent  
12:17:29 17 on R & D?  
12:17:29 18 MR. MUEHLBERGER: Object to  
12:17:29 19 the form.  
12:17:29 20 A. Yes. And it's also more than  
12:17:32 21 has been spent on R & D at AT&T, also.  
12:17:36 22 Q. Well, I'm going to object to  
12:17:39 23 that as being nonresponsive.  
12:17:41 24 A. Well, yes. The answer is yes  
12:17:42 25 to your question.

Produced by RECORDED BY MR. HOPPER

- 12:17:44 1 Q. Does smoking cause bronchitis?
- 12:17:44 2 MR. MUEHLBERGER: Object to
- 12:17:49 3 the form.
- 12:17:49 4 A. It's been linked to emphysema
- 12:17:52 5 and asthma. Bronchitis, I don't know.
- 12:17:52 6 BY MR. HOPPER:
- 12:17:55 7 Q. So, it causes chronic
- 12:17:58 8 obstructive pulmonary disease?
- 12:18:02 9 MR. MUEHLBERGER: Object to
- 10 the form.
- 11 A. I think we're -- I think I can
- 12 say yes to that.
- 13 BY MR. HOPPER:
- 12:18:06 14 Q. COPD.
- 15 Does it cause heart disease?
- 12:18:06 16 MR. MUEHLBERGER: Object to
- 17 the form.
- 12:18:07 18 A. Well, I think that one of the
- 12:18:08 19 main things on heart disease is carbon
- 12:18:12 20 monoxide. So, I would say it's
- 12:18:16 21 certainly linked there.
- 12:18:16 22 BY MR. HOPPER:
- 12:18:17 23 Q. Does it cause lung cancer?
- 12:18:17 24 MR. MUEHLBERGER: Object to
- 12:18:26 25 the form.

Produced by Reuter's  
Newspaper Wire Service

12:18:26 1 A. I would answer yes to that.  
12:18:26 2 BY MR. HOPPER:  
12:18:26 3 Q. And does it cause cancer of  
several other organs that you are aware  
of?  
12:18:30 4  
12:18:31 5  
12:18:31 6 MR. MUEHLBERGER: Object to  
the form.  
12:18:31 7  
12:18:31 8 A. I haven't seen enough data on  
those to give you any more than a guess  
on my part.  
12:18:31 9  
12:18:32 10  
12:18:32 11 BY MR. HOPPER:  
12:18:32 12 Q. What is your personal opinion?  
12:18:32 13 MR. MUEHLBERGER: Object to  
the form.  
12:18:38 14  
12:18:38 15 A. My person opinion is that the  
lungs are the most vulnerable.  
12:18:38 16  
12:18:38 17 BY MR. HOPPER:  
12:18:58 18 Q. In your thirty-five years at  
12:19:00 19 Philip Morris, did any of the senior  
12:19:06 20 VP's, the management, CEO of the  
12:19:07 21 company, head of R & D, ever call a  
12:19:11 22 meeting to discuss the fact that  
12:19:14 23 cigarette smoking causes disease?  
12:19:21 24 MR. MUEHLBERGER: Object to  
12:19:21 25 the form.

Produced by RRTC  
Reviewed by RRTC

12:19:21 1 A. Well, we have had those type  
12:19:21 2 of discussions in the last five years,  
12:19:23 3 certainly.

12:19:23 4 BY MR. HOPPER:

12:19:24 5 Q. So, out of thirty-five years,  
12:19:25 6 you just started talking about it  
12:19:27 7 within the last five years?

12:19:27 8 MR. MUEHLBERGER: Object to  
12:19:29 9 the form.

12:19:29 10 A. Well, that is what I remember,  
12:19:32 11 to answer your question explicitly when  
12:19:32 12 you said senior people.

12:19:36 13 Because I didn't deal with  
12:19:39 14 very many senior people until a few  
12:19:41 15 years ago, anyway.

12:19:41 16 BY MR. HOPPER:

12:19:44 17 Q. Did anyone in the management  
12:19:45 18 or anyone even in the R & D Department  
12:19:50 19 say, let's get the scientists together  
12:19:54 20 and determine if smoking causes lung  
12:20:03 21 cancer once and for all; in your first  
12:20:03 22 two or three years, or five years, or  
12:20:03 23 ten years, or fifteen years that you  
12:20:04 24 were with the company?

12:20:04 25 MR. MUEHLBERGER: Object to

Produced by RTRT

12:20:06 1 the form.  
12:20:06 2 A. I don't remember that  
12:20:06 3 happening.  
12:20:07 4 But I also remember that we  
12:20:10 5 had very, very focused programs to  
12:20:13 6 understand, you know, what you really  
12:20:16 7 have to understand -- the fundamentals  
12:20:19 8 of combustion and so forth -- and we  
12:20:23 9 were cognizant that we were going to  
12:20:27 10 try to reduce the compounds being  
12:20:27 11 formed.  
12:20:29 12 BY MR. HOPPER:  
12:20:29 13 Q. But that has only --  
12:20:29 14 A. Speaking as a scientist.  
12:20:32 15 Q. Sure. But happened in the  
12:20:33 16 last two to three years, perhaps; maybe  
12:20:36 17 five, correct?  
12:20:36 18 MR. MUEHLBERGER: Object to  
12:20:36 19 the form.  
12:20:36 20 A. I will argue when we started  
12:20:39 21 our combustion program in '73, a lot of  
12:20:42 22 what we did in Accord came right out of  
12:20:45 23 that basic program.  
12:20:45 24 BY MR. HOPPER:  
12:20:47 25 Q. But as I have already asked

Produced by RTTIC

12:20:49 1 you, you never communicated this  
12:20:52 2 information to the public, did you?  
12:20:52 3 MR. MUEHLBERGER: Object to  
12:20:54 4 the form. Asked and answered.  
12:20:54 5 A. I didn't.  
12:20:54 6 BY MR. HOPPER:  
12:20:54 7 Q. Did the company?  
12:20:54 8 MR. MUEHLBERGER: Object to  
12:20:56 9 the form. Asked and answered.  
12:20:56 10 A. And to the best of my -- to  
12:20:59 11 my knowledge, the company didn't.  
12:21:00 12 MR. MUEHLBERGER: I'm going  
12:21:01 13 to request a lunch break. It's  
12:21:01 14 12:30, we've been going  
12:21:03 15 three-and-a-half hours. I asked  
12:21:04 16 you fifteen minutes ago to stop at  
12:21:07 17 a convenient point. I would ask  
12:21:07 18 that you do so.  
12:21:21 19 MR. HOPPER: Well, lunch typically  
20 happens, say, twelve to one. I've  
21 got a number of questions that I  
22 want to finish with Dr. Lilly. I'm  
23 more than happy to take a break and  
24 I don't want anybody to be  
25 uncomfortable, but I would like to

Produced by RIRE  
HUMPHREY

12:21:21 1 finish this section of questioning  
12:21:24 2 and then we will stop and we'll  
12:21:24 3 have a lunch break.  
12:21:26 4 MR. MUEHLBERGER: How much  
12:21:27 5 longer are we going to go?  
12:21:28 6 MR. HOPPER: We're going to go  
12:21:28 7 until I finish getting through this  
12:21:32 8 section of questions right here.  
12:21:32 9 MR. MUEHLBERGER: No, we're  
12:21:32 10 not, we're stopping for a lunch  
12:21:37 11 break.  
12:21:37 12 I'm hyperglycemic. I need to  
12:21:41 13 get some food in me. I'm sorry,  
12:21:41 14 it's been three-and-a-half hours.  
12:22:11 15 MR. HOPPER: Oh, then I  
12:22:11 16 apologize. I wasn't aware of that.  
12:22:11 17 I think that it's important to  
12:22:11 18 put on the record that Counsel for  
12:22:11 19 Philip Morris has informed me that  
12:22:11 20 he needs to stop for lunch, that  
12:22:11 21 he's hyperglycemic. And that from  
12:22:11 22 plaintiff's standpoint, it's not a  
12:22:11 23 good time to stop the deposition.  
12:22:11 24 I don't want anybody to be  
12:22:11 25 uncomfortable, but I feel like we

Produced by RJE  
HUMPHREY

12:22:11 1 are at the point of some very  
12:22:11 2 critical questions and I would  
12:22:14 3 prefer not to stop.  
12:22:14 4 If the witness gets up and  
12:22:16 5 walks out of here, or if his  
12:22:16 6 counsel gets up and walks out of  
12:22:16 7 here, I guess I can't do anything  
12:22:19 8 about it.  
12:22:19 9 But I don't want anybody to be  
12:22:27 10 uncomfortable or to have a medical  
12:22:27 11 problem. So --  
12:22:28 12 MR. BAILEY: Can we agree not  
12:22:28 13 to take a very long lunch break?  
14 MR. MUEHLBERGER: Sure. What  
15 do you want?  
16 MR. HOPPER: Be back here at  
17 one.  
18 MR. MUEHLBERGER: Yes.  
19 VIDEOGRAPHER: Off the record  
20 at 12:22.  
21 (Following a lunch break, the  
22 following procedures were had.)  
23 VIDEOGRAPHER: We are back on  
24 the record at 1:05.  
25 MR. HOPPER: Would the Court

produced by R.R.K.

13:05:35 1 Reporter read back the last  
12:20:47 2 question.  
12:20:47 3 (Reporter read: "But as I have  
12:20:48 4 already asked you, you never  
12:20:50 5 communicated this information to  
12:20:53 6 the public, did you?" "Object to  
12:20:53 7 the form. Asked and answered."  
12:20:54 8 "I didn't."  
12:20:55 9 "Did the company."  
12:20:56 10 "And to the best of my  
12:20:59 11 knowledge, the company didn't."  
12:20:59 12 /  
13:06:21 13 BY MR. HOPPER:  
13:06:21 14 Q. Doctor, do you have an idea,  
13:06:25 15 or you can put me at a place in time  
13:06:29 16 where you think the company had an  
13:06:36 17 understanding that these various  
13:06:39 18 carcinogenic compounds we've discussed  
13:06:44 19 and that you've referenced were found  
13:06:49 20 in your company's products?  
13:06:48 21 MR. MUEHLBERGER: Object to  
13:06:55 22 the form.  
13:06:58 23 A. Is the question when I knew?  
13:06:55 24 BY MR. HOPPER:  
13:06:55 25 Q. No, sir. When, at a point in

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13:06:56 1 time, your company knew.  
13:06:58 2 MR. MUEHLBERGER: Object to  
13:06:59 3 the form.  
13:07:06 4 A. Well, I mean, you showed me  
13:07:06 5 some documents where some of our  
13:07:09 6 chemists knew some things in '61, if I  
13:07:13 7 recall, '62. And I think particularly  
13:07:16 8 R.J. Reynolds had done a lot of  
13:07:16 9 Chemistry and published it over the  
13:07:19 10 years.  
13:07:19 11 So, I think there was a  
13:07:21 12 continuum of knowing what was in  
13:07:24 13 tobacco smoke. And numerous papers  
13:07:27 14 published, and also by the American  
13:07:30 15 Health Foundation, which is run by  
13:07:34 16 Professors Hoffmann and Wynder.  
13:07:34 17 BY MR. HOPPER:  
13:07:39 18 Q. But you didn't make it to  
13:07:44 19 Philip Morris from Gulf until '65;  
13:07:44 20 right?  
13:07:46 21 A. That's correct.  
13:07:47 22 Q. And you testified earlier that  
13:07:48 23 no one shared any information about  
13:07:50 24 this with you for quite some time,  
25 correct?

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1                   MR. MUEHLBERGER: Object to  
2                   the form.

3 BY MR. HOPPER:

4                   Q. I mean, we can go back read  
5 what you said on the record, but --

6                   A. What I said on the record was  
7 correct.

8                   I mean, I was working over  
9 here in physical science as a physical  
10 scientist. And I became more and more  
11 cognizant of what was in the smoke as I  
12 got closer, particularly in the  
13 nonconventional products.

14                  Now, I don't know when other  
15 people in the company whose charge was  
16 to work on these things, knew.

17                  I can certainly tell you when  
18 I knew, and when it was quite clear  
19 that we were going after reducing these  
20 things. Which turns out to be when we  
21 started the nonconventional product.

22                  Q. And what year was that?

23                  A. We started those, a little bit  
24 in '76, but mainly in 1987.

25                  Q. Doctor, I'm about to mark as

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PLTC

13:09:12 1 Lilly Exhibit Number Six, a document  
13:09:12 2 that was produced by Philip Morris,  
13:09:14 3 Incorporated, it says at the time.  
13:09:15 4 And it's titled Tobacco and  
13:09:18 5 Health - R & D, ampersand, Approach,  
13:09:24 6 Presentation to the R & D Committee by  
13:09:27 7 Dr. H. Wakeham at a meeting held in the  
13:09:31 8 New York office on November 15th, 1961.  
13:09:32 9 You testified a few moments  
13:09:34 10 ago you knew Dr. Wakeham, correct?  
13:09:38 11 A. I did do know Dr. Wakeham.  
13:09:45 12 Q. I'm going to give you a copy  
13:09:46 13 of Exhibit Number Six and have you look  
13:09:49 14 at it. I'm going to give copies to  
13:09:51 15 your counsel as well.  
13:09:51 16 (Whereupon, the document  
13:09:59 17 was marked as Exhibit No. Six for  
13:09:59 18 Identification.)  
13:09:59 19 (Tendering document.)  
13:09:59 20 BY MR. HOPPER:  
13:10:10 21 Q. Take however much time you  
13:10:12 22 need, and counsel needs to look at it.  
13:10:17 23 A. I think I have seen this  
13:10:19 24 document before.  
13:10:19 25 MR. HOPPER: For the record,

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Produced by RICOH

13:10:20 1 there is not a Scott document  
13:10:25 2 number. However -- unless the SA  
13:10:31 3 141 is a Scott number that I'm not  
13:10:37 4 aware of. But we will enter it as  
13:10:39 5 Lilly Exhibit Number 6 and it is  
13:10:48 6 marked SA-141.  
13:12:02 7 A. I have scanned the document.  
13:12:05 8 BY MR. HOPPER:  
13:12:06 9 Q. Dr. Lilly, do you -- you  
13:12:12 10 testified a moment ago that you are  
13:12:14 11 familiar with this document and you  
13:12:15 12 have seen it before?  
13:12:16 13 A. Once you handed it to me, I  
13:12:20 14 remembered I have seen it before.  
13:12:21 15 Q. Have you discussed this  
13:12:23 16 document with anyone prior to the  
13:12:25 17 deposition today?  
13:12:26 18 A. No, I have not.  
13:12:28 19 Q. When you first saw this  
13:12:31 20 document or became aware of it, did you  
13:12:34 21 learn who might have been in attendance  
13:12:38 22 at this presentation who would have  
13:12:41 23 made up the R & D Committee at that  
13:12:44 24 time?  
13:12:44 25 MR. MUEHLBERGER: Object to

RECORDED COPY

13:12:44 1 the form.  
13:12:44 2 A. No, I don't know. Nor have I  
13:12:48 3 found out who made the R & D Committee  
13:12:50 4 up.  
13:12:50 5 BY MR. HOPPER:  
13:12:53 6 Q. On the -- because I don't  
13:12:53 7 believe these pages are numbered that I  
13:12:57 8 can see, three pages into the document  
13:13:02 9 is what appears to be a table of  
13:13:04 10 contents. Do you see that?  
13:13:06 11 A. Yes.  
13:13:09 12 Q. You testified earlier today  
13:13:11 13 that as a Senior Scientist at Philip  
13:13:14 14 Morris that you ran a research program  
13:13:17 15 called Combustion Research. And in  
13:13:21 16 that research program, you studied how  
13:13:24 17 cigarettes worked, that you studied the  
13:13:27 18 physics and chemistry and all. So, you  
13:13:27 19 would be familiar with Roman Numeral I,  
13:13:44 20 where Dr. Wakeham talks about the  
13:13:44 21 chemistry of cigarette smoke, correct?  
13:13:44 22 MR. MUEHLBERGER: Object to  
13:13:44 23 the form.  
13:13:44 24 A. Well, I did much more global  
13:13:44 25 things than how much the total amount

13:13:44 1 of tar produced or the certain  
13:13:44 2 pyrolysis level and so forth  
13:13:44 3 BY MR. HOPPER:  
13:13:44 4 Q. But you would be familiar with  
13:13:52 5 the chemistry of the smoke, correct?  
13:13:52 6 A. I'm somewhat familiar with the  
13:13:56 7 chemistry of smoke, yes.  
13:13:57 8 Q. And the composition of  
13:13:59 9 mainstream smoke?  
13:14:01 10 A. Well, I am a lot more familiar  
13:14:07 11 today than I was in '73.  
13:14:07 12 Q. Sure.  
13:14:07 13 In your expert report that you  
13:14:08 14 submitted that's been made an exhibit  
13:14:08 15 in this deposition, one of the things  
13:14:09 16 that you claim to testify to in there  
13:14:13 17 is your knowledge and experience and  
13:14:14 18 training in the composition of  
13:14:16 19 mainstream smoke; correct?  
13:14:23 20 A. Correct.  
13:14:23 21 Q. And of your knowledge and  
13:14:23 22 awareness, and I believe it's also in  
13:14:23 23 your expert report, that you are  
13:14:23 24 testifying to the major constituents in  
13:14:26 25 mainstream smoke; is that correct?

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PROTOMONY

13:14:20 1 A. That's correct.  
13:14:31 2 Q. Do you see also in that table  
13:14:33 3 of contents where Dr. Wakeham is  
13:14:36 4 discussing the cancer controversy?  
13:14:41 5 He has it marked Page Five,  
13:14:45 6 but I can't find any page numbers on  
13:14:48 7 these documents.  
13:14:49 8 MR. MUEHLBERGER: Object to  
13:14:49 9 the form. The document speaks for  
13:14:49 10 itself.  
13:14:49 11 A. I see where you are pointing  
13:14:51 12 it out.  
13:15:06 13 Q. I see. It's way back.  
13:15:15 14 Does it appear to you from  
13:15:16 15 looking at this document, and you have  
13:15:19 16 had time to read it, or look at it  
13:15:20 17 again here today, that Dr. Wakeham is  
13:15:28 18 apprising the R & D Committee of  
13:15:31 19 evidence linking cancer and tobacco?  
13:15:35 20 MR. MUEHLBERGER: Objection to  
13:15:36 21 the form.  
13:15:36 22 A. That is certainly what I get  
13:15:39 23 out of looking it at it a few minutes  
13:15:43 24 ago and earlier. I can't quite  
13:15:46 25 remember when I saw it before.

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13:15:46 1 BY MR. HOPPER:  
13:15:52 2 Q. If you look further into the  
13:15:53 3 document, there is a chart -- and  
13:16:02 4 I'll have to show you this and I would  
13:16:04 5 like to show it for purposes of the  
13:16:07 6 camera -- I can't point you to a page  
13:16:18 7 because these are not numbered.  
13:16:18 8 MR. MUEHLBERGER: Is there a  
13:16:18 9 Bates Number on the bottom?  
13:16:18 10 BY MR. HOPPER:  
13:16:18 11 Q. 1000277433, it looks like.  
13:16:20 12 A. That is what I have here.  
13:16:21 13 Q. Okay. Would it appear to you  
13:16:24 14 that Dr. Wakeham is discussing the  
13:16:32 15 potency of carcinogens based on paint  
13:16:37 16 studies that have been done to the skin  
13:16:37 17 of mice?  
13:16:44 18 MR. MUEHLBERGER: Object to  
13:16:44 19 the form. The document speaks for  
13:16:44 20 itself.  
13:16:44 21 A. That is what it says.  
13:16:44 22 BY MR. HOPPER:  
13:16:45 23 Q. And is he listing some of the  
13:16:50 24 various compounds that you identified  
13:16:50 25 earlier today in the deposition that

13:16:53

1 are carcinogenic that are found in your  
2 tobacco products?

13:17:00

3 MR. MUEHLBERGER: Object to the  
4 form.

12-37-01

5 A. These are all polycyclic  
6 hydrocarbons. It looks to me like

listing, and we talked about

benzanthracene. They're both on  
here.

33,17,14

Q. On the next page, Dr. Wakeham lists a partial list of compounds in the cigarette smoke also identified as carcinogens.

13-17-19

5 Are some of these the same  
6 ones that we discussed this  
7 morning.

12:12:24

8 MR. MUEHLBERGER: Object to  
9 the form.

12:13:27

20 A. These are kind of an odd list  
21 to me. Saying that glucose and  
22 fructose are carcinogens. I find that  
23 pretty strange.

13.13.14

34 BY MR. HOPPER:

11-12-1

25           Q     But the benzene are on there.

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13:17:45 1 correct?  
13:17:45 2 A. You have the benzenes and  
13:17:45 3 chromium and cobalt. So, it's kind of  
13:17:45 4 a list that -- there's some things that  
13:17:48 5 I think maybe aren't in here but there  
13:17:50 6 are some things that are.  
13:17:52 7 Q. On the next page, Dr. Wakeham  
13:17:55 8 is apparently discussing cancer  
13:17:57 9 promoting agents in cigarette smoke,  
13:17:57 10 and he lists some of those promoting  
13:18:03 11 agents.  
13:18:03 12 Are some of the other  
13:18:03 13 compounds and chemicals that we  
13:18:07 14 discussed earlier, the phenyls, the  
13:18:07 15 benzenes, are those to your knowledge  
13:18:12 16 also the compounds that are  
13:18:14 17 carcinogenic?  
13:18:16 18 MR. MUEHLBERGER: Object to  
13:18:17 19 the form.  
13:18:17 20 A. Well, certainly, benzene is a  
13:18:20 21 known human carcinogen. Phenols, I'm  
13:18:24 22 not quite so sure where it falls, okay.  
13:18:24 23 BY MR. HOPPER:  
13:18:37 24 Q. Again, I will have to point  
13:18:38 25 you, I guess, to the Bates Number

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13:18:40 1 another couple of pages further back.  
13:18:47 2 It's 1000277438, I believe it is.  
13:18:49 3 The title on that page is,  
13:18:51 4 "Smoking and Cardiovascular Diseases."  
13:18:58 5 A. I have it here.  
13:18:59 6 Q. Does it appear to you that  
13:19:02 7 Dr. Wakeham is discussing his belief  
13:19:07 8 that cardiovascular ailments that arise  
13:19:07 9 from smoking are due to physiological  
13:19:07 10 effects of nicotine?  
13:19:07 11 MR. MUEHLBERGER: Object to  
13:19:09 12 the form.  
13:19:08 13 A. That is what the document  
13:19:12 14 says.  
13:19:12 15 Q. And that he's discussing with  
13:19:13 16 the R & D Committee, the effects on the  
13:19:16 17 nervous system and the effects on the  
13:19:16 18 adrenal medulla oblongata in the brain?  
13:19:16 19 MR. MUEHLBERGER: Object to  
13:19:16 20 the form. The document speaks or  
13:19:20 21 itself.  
13:19:20 22 A. That is what the document  
13:19:22 23 says.  
13:19:22 24 BY MR. HOPPER:  
13:19:22 25 Q. And he talks about other

13:19:24 1 complications that arise from nicotine  
13:19:27 2 and how that relates to cardiovascular  
13:19:31 3 diseases?

13:19:31 4 MR. MUEHLBERGER: Object to  
13:19:34 5 the form.

13:19:34 6 A. That is what he says.

13:19:34 7 BY MR. HOPPER:

13:19:35 8 Q. Further into the document, he  
13:19:49 9 says that -- it's 1000277442. It's  
13:19:59 10 titled, "Reduction of Carcinogens in  
13:20:02 11 Smoke."

13:20:07 12 Do you find that page?

13:20:09 13 A. Yes, I think I have it here.

13:20:12 14 Q. Is it apparent to you that he  
13:20:15 15 is identifying what would be needed in  
13:20:18 16 order to produce a medically acceptable  
13:20:24 17 cigarette, which is something that you  
13:20:28 18 and I discussed earlier in the  
13:20:30 19 deposition today?

13:20:29 20 MR. MUEHLBERGER: Objection to  
13:20:30 21 form.

13:20:33 22 A. Well, he certainly is talking  
13:20:35 23 about reduction of carcinogens. I  
13:20:37 24 didn't see the medical part, but --

13:20:37 25 BY MR. HOPPER:

13:20:39 1 Q. Isn't he discussing the fact  
13:20:41 2 that carcinogens are found in  
13:20:46 3 practically every class of compounds in  
13:20:48 4 smoke, which is also a question I asked  
13:20:49 5 you about earlier?

13:20:49 6 MR. MUEHLBERGER: Object to  
13:20:51 7 form.

13:20:51 8 A. Yes. That is certainly what  
13:20:54 9 he says in Part One.

13:20:54 10 BY MR. HOPPER:

13:21:04 11 Q. If you go to the last -- it's  
13:21:07 12 not exactly the last page because it  
13:21:10 13 looks like the last page is some type  
13:21:13 14 of cover that was on this  
13:21:17 15 presentation -- he has a summary.

13:21:18 16 For the Jury, can you state  
13:21:21 17 what Dr. Wakeham's points are in  
13:21:24 18 summarizing that would be required to  
13:21:28 19 develop a medically acceptable low  
13:21:30 20 carcinogen cigarette.

13:21:32 21 MR. MUEHLBERGER: Object to  
13:21:33 22 the form and instruct the witness  
13:21:34 23 not to read what is on this into  
13:21:34 24 the record.

13:21:40 25 MR. HOPPER: Why can't he read

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13:21:48 1 it?  
13:21:48 2 MR. MUEHLBERGER: It's not a  
13:21:48 3 question; it's a directive.  
13:21:48 4 MR. HOPPER: I asked him to.  
13:21:48 5 MR. MUEHLBERGER: No, he's not  
13:21:48 6 going to read documents into -- I.  
13:21:48 7 MR. HOPPER: Yes, he is.  
13:21:48 8 MR. HOPPER: I'm instructing  
13:21:49 9 him not to do it.  
13:21:50 10 MR. HOPPER: Then we are going  
13:21:56 11 to call the Court right now.  
13:21:56 12 MR. MUEHLBERGER: Fine.  
13:22:05 13 MR. HOPPER: Let's go. I'm  
13:22:05 14 not going to put up with it.  
13:22:05 15 VIDEOGRAPHER: Going off the  
13:22:13 16 record at 1:21.  
13:23:07 17 (Off record.)  
13:23:08 18 MR. HOPPER: Back on the  
13:23:10 19 record.  
13:23:11 20 VIDEOGRAPHER: We are back on  
13:23:11 21 the record at 1:22.  
13:23:14 22 BY MR. HOPPER:  
13:23:38 23 Q. Dr. Lilly, just before we  
13:23:38 24 went off the record, I asked you to  
13:23:38 25 tell the Jury what you believe Dr.

13:23:38 1 Wakeham in summary is saying is  
13:23:38 2 required for Philip Morris to produce a  
13:23:38 3 medically acceptable low carcinogen  
13:23:38 4 cigarette.

13:23:38 5 MR. MUEHLBERGER: Object to  
13:23:38 6 the form. Document speaks for  
13:23:38 7 itself.

13:23:38 8 A. I think he is saying in '61  
13:23:42 9 what I would tell you we are saying  
13:23:42 10 today.

13:23:42 11 Q. Which is?

13:23:42 12 A. That you've got to devote time  
13:23:43 13 to basic research, you've got to spend  
13:23:46 14 some money, and you've got to really  
13:23:49 15 have some people determined to take  
13:23:52 16 things out. So, that hasn't changed  
13:23:56 17 for me even yesterday.

13:23:58 18 Q. Well, if my arithmetic is  
13:24:00 19 correct from 1961 to almost 2001 is  
13:24:01 20 forty years, correct?

13:24:02 21 A. You are right.

13:24:03 22 Q. I think I'm right about that.

13:24:06 23 A. Yes, you are.

13:24:07 24 Q. And to my knowledge, to my  
13:24:10 25 understanding, but I'm asking you as an

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13:24:14 1 expert witness and as an employee who  
13:24:16 2 has worked for thirty-five years at  
13:24:18 3 Philip Morris, that to this date, isn't  
13:24:23 4 it true that Philip Morris has not  
13:24:25 5 produced a medically acceptable  
13:24:27 6 cigarette?  
13:24:28 7 MR. MUEHLBERGER: Object to  
13:24:29 8 the form.  
13:24:30 9 A. I agree with you. Philip  
13:24:32 10 Morris has not. Okay.  
13:24:32 11 BY MR. HOPPER:  
13:24:36 12 Q. Thank you.  
13:24:41 13 MR. MUEHLBERGER: Object to  
13:24:43 14 you cutting him off if he was not  
13:24:41 15 done with his answer.  
13:24:43 16 MR. HOPPER: I'm not. It  
13:24:43 17 called for a yes or no question and  
13:24:47 18 he answered the question.  
13:24:47 19 MR. MUEHLBERGER: But I think  
13:24:49 20 you cut him off and I object to you  
13:24:49 21 cutting him off.  
13:24:53 22 MR. HOPPER: I didn't cut him  
13:24:53 23 off.  
13:25:06 24 BY MR. HOPPER:  
13:25:06 25 Q. Isn't it true that Philip

13:25:06 1 Morris' cigarettes still contained all  
13:25:06 2 of the compounds that we have been  
13:25:06 3 discussing in the course of this  
13:25:06 4 deposition today and that you've  
13:25:06 5 identified as carcinogenic?

13:25:08 6 MR. MUEHLBERGER: Object to  
13:25:08 7 the form.

13:25:09 8 A. I will tell you that the  
13:25:10 9 Accord cigarettes has reduced 57 of the  
13:25:14 10 [REDACTED] compounds brought forward by the  
13:25:18 11 medical community to very large  
13:25:21 12 amounts, including a hundred percent of  
13:25:24 13 some of the PAHs.

13:25:24 14 BY MR. HOPPER:

13:25:27 15 Q. That's a test-market  
13:25:28 16 cigarette, correct?

13:25:28 17 A. That is a cigarette that is  
13:25:31 18 being sold in Osaka, Quabay, and more  
13:25:35 19 than half the stores in Richmond.

13:25:35 20 Q. And choose to believe it or  
13:25:39 21 not, but I will tell you that your  
13:25:39 22 colleague, Vice-President of Strategic  
13:25:43 23 Planning and Operations, Mr. Burnley,  
13:25:43 24 testified just last week here in this  
13:25:45 25 office that, in fact, that is a

13:25:48 1 test-market cigarette. It has not been  
13:25:51 2 found to be commercially viable at this  
13:25:56 3 point by your company.

13:25:56 4 MR. MUEHLBERGER: Object to  
13:25:56 5 the form.

13:25:56 6 A. Well, I would disagree with my  
13:25:57 7 friend Harold. And it is a test-market  
13:26:01 8 cigarette, but we are planning to roll  
13:26:03 9 that out very rapidly with an improved  
13:26:07 10 version starting next Spring.

13:26:12 11 Q. Forty years later almost?

13:26:12 12 MR. MUEHLBERGER: Object to  
13:26:14 13 the form.

13:26:18 14 A. I would also comment that  
13:26:19 15 technology changes --

13:26:19 16 Q. It's forty years later?

13:26:19 17 A. I understand, but I will also  
13:26:21 18 comment that the technology to do it is  
13:26:23 19 pretty new.

13:26:30 20 Q. I think we need to take your  
13:26:30 21 copy, which is the actual exhibit, and  
13:26:31 22 give that to the court reporter.

13:27:02 23 Now, when we talked about --  
13:27:03 24 earlier today, when I asked you  
13:27:08 25 questions about tobacco-specific

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13:27:10 1 nitrosamines, as a scientist and as an  
13:27:17 2 expert in this case, you've testify  
13:27:20 3 that you know and understand what those  
13:27:22 4 are, correct?  
13:27:23 5 A. Yes, I do.  
13:27:24 6 Q. And are you aware that  
13:27:28 7 apparently Philip Morris in 1985, made  
13:27:30 8 a move from monitoring TSNA's to  
13:27:35 9 actually developing a program to reduce  
13:27:39 10 TSNA's?  
13:27:41 11 MR. MUEHLBERGER: Object to  
13:27:42 12 the form.  
13:27:42 13 A. I'm familiar that our  
13:27:44 14 chemistry group had worked on  
13:27:48 15 techniques to measure TSNA's and are  
13:27:51 16 doing a lot of work in the recon plants  
13:27:55 17 and so forth.  
13:27:58 18 Q. And now fast forwarding from  
13:27:59 19 1985 to 2000, some fifteen years later,  
13:28:06 20 has Philip Morris and your Research and  
13:28:07 21 Development Department actually removed  
13:28:09 22 TSNA's from your products?  
13:28:15 23 MR. MUEHLBERGER: Object to  
13:28:15 24 the form.  
13:28:16 25 A. They are still in our products

13:28:18      1    but we have put sixty-five million  
13:28:23      2    dollars into outfitting heat exchangers  
13:28:29      3    in the flue-cured barns, and that seems  
13:28:29      4    to very successful, and the industry is  
13:28:34      5    moving that way. So, we're getting  
13:28:34      6    very close to where there will be no  
13:28:41      7    TSNA's in flue-cured tobacco.

DOCTORS  
FOR  
A  
FREE  
CURE  
TO  
Tobacco  
Industry

13:28:41      8    BY MR. HOPPER:

13:28:42      9    Q.    It took you fifteen years to  
13:28:44      10    get there?

13:28:44      11    MR. MUEHLBERGER: Object to  
13:28:45      12    the form.

13:28:46      13    A.    I can give you my view.

13:28:48      14    BY MR. HOPPER:

13:28:50      15    A.    Well, I'm not asking for your  
13:28:52      16    view. I'm saying, it took you fifteen  
13:28:53      17    years to get there?

13:28:55      18    MR. MUEHLBERGER: Object to  
13:28:56      19    the form.

13:28:58      20    A.    My view says maybe we were  
13:28:59      21    there and didn't know it fifteen years  
13:28:59      22    ago.

13:28:58      23    BY MR. HOPPER:

13:28:58      24    Q.    I see.

13:28:58      25    Dr. Lilly, do you know how

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13:28:58 1 many people have died from lung cancer,  
13:29:01 2 or from smoking your products during  
13:29:02 3 the last fifteen years?

13:29:07 4 MR. MUEHLBERGER: Object to  
13:29:08 5 the form.

13:29:09 6 A. I don't know. I know what I  
13:29:10 7 read in the paper where it says several  
13:29:11 8 hundred thousand. I'm not very  
13:29:12 9 familiar where all the numbers come  
13:29:13 10 from.

13:29:14 11 BY MR. HOPPER:

13:29:15 12 Q. Do you know how many  
13:29:16 13 cigarettes Philip Morris has sold  
13:29:17 14 during that fifteen-year period of  
13:29:18 15 time.

13:29:19 16 MR. MUEHLBERGER: Object to  
13:29:20 17 the form.

13:29:21 18 A. A couple of hundred, three  
13:29:22 19 hundred billion a year. So, a lot. I  
13:29:23 20 would say over four trillion.

13:29:24 21 BY MR. HOPPER:

13:29:25 22 Q. Do you know how many people  
13:29:26 23 began smoking during that twenty-year  
13:29:27 24 period of time?

13:29:28 25 MR. MUEHLBERGER: Object to

Produced by RJRC

13:29:49 1 the form.  
13:29:49 2 A. Not explicitly, no.  
13:29:49 3 Q. Do you know how many young  
13:29:49 4 people under the age of eighteen began  
13:29:52 5 smoking those products that still have  
13:29:56 6 nitrosamines and other carcinogens in  
13:29:59 7 them during that fifteen-year period of  
13:30:02 8 time?  
13:30:02 9 MR. MUEHLBERGER: Object to  
13:30:02 10 the form.  
13:30:02 11 A. No, not explicitly.  
13:30:08 12 Q. Do you have any idea -- can  
13:30:08 13 you tell the Jury how many young people  
13:30:08 14 may have started to smoke as a result  
13:30:10 15 of the advertising, promotions and  
13:30:10 16 marketing from all the billions of  
13:30:11 17 dollars that you spent -- that your  
13:30:11 18 company spent -- to convince people to  
13:30:19 19 smoke during that fifteen-year period  
13:30:21 20 of time?  
13:30:21 21 MR. MUEHLBERGER: Object to  
13:30:22 22 the form.  
13:30:22 23 A. No, I don't know.  
13:30:23 24 Q. Or how many billions were  
13:30:26 25 spent during that fifteen-year period

Produced by  
THE HONORABLE

13:30:30 1 of time when your company knew as far  
13:30:32 2 back as '61 that smoking caused cancer?  
13:30:32 3 MR. MUEHLBERGER: Object to  
13:30:34 4 the form.  
13:30:34 5 A. I don't know what. The  
13:30:34 6 marketing expenses have been summed up.  
13:30:35 7 Q. Would you say probably on the  
13:30:37 8 order of about twenty billion dollars?  
13:30:37 9 MR. MUEHLBERGER: Object to  
13:30:40 10 the form.  
13:30:40 11 A. I accept your number, but I  
13:30:40 12 haven't added it up. I could go do  
13:30:43 13 that but it's certainly a lot, I would  
13:30:46 14 guess.  
13:30:47 15 Q. And you have testified today  
13:30:54 16 that your cigarettes that you  
13:30:54 17 manufacture still contain TSNAs?  
13:30:59 18 MR. MUEHLBERGER: Object to  
13:30:59 19 the form.  
13:31:00 20 A. Yeah, they do.  
13:31:02 21 Q. And they still contain  
13:31:04 22 polynuclear hydrocarbons?  
13:31:14 23 MR. MUEHLBERGER: I would  
13:31:14 24 object again to your interrupting  
13:31:19 25 him in the middle of an answer. If

1       you ask a question, let him answer  
2       it, Counsel.

3                    MR. HOPPER: Well, the  
4       question I asked, asked him to say  
5       yes or no.

6                    MR. MUEHLBERGER: The question  
7       you asked him, calls for him to  
8       answer, and that's what he was  
9       trying to do when you cut him off.

10                  MR. HOPPER: Calls for a yes  
11       or no answer.

12                  MR. MUEHLBERGER: In your  
13       opinion.

14                  MR. HOPPER: It's not my  
15       opinion. I can ask the court  
16       reporter to read it back and in  
17       fact, it will ask him to say yes or  
18       no.

19                  MR. MUEHLBERGER: It obviously  
20       doesn't and I object to you  
21       interrupting him in the middle of  
22       his answers.

23                  MR. HOPPER: Madam Court  
24       Reporter, would you read that  
25       question back, please.

Produced by the  
California  
Industrial  
Relations  
Project

4 MR. HOPPER: The one before  
5 that, please.

13 BY MR. HOPPER:

14 Q. That is the question before  
15 the witness at this time.

16 A. And the answer is yes.

17. BY MR. HOPPER:

18 Q. Do you know why tobacco is  
19 fine-cut, in the use of your products?

20 MR. MUEHLBERGER: Object to  
21 the form.

22 A. I don't know what you mean by  
23 fine-cut. Is that a tobacco industry  
24 term -- fine-cut?

25 Q. I believe it is.

Produced by RICOH  
RICOH

13:34:04 1 A. We cut cigarettes, you know,  
13:34:04 2 tobacco for like the Marlboro  
13:34:05 3 cigarettes -- every inch, we can get  
13:34:07 4 thirty cuts to the inch, but that is  
13:34:10 5 not fine-cut. It is kind of normal  
13:34:14 6 cut.

13:34:14 7 Q. Fine-cut is small particles  
13:34:18 8 and small cuts of the tobacco?

13:34:21 9 A. There used to be products that  
13:34:23 10 were cut much finer than that. I don't  
13:34:27 11 know whether they are still on the  
13:34:30 12 market or not. Like Navy cut.

13:34:33 13 Q. Let me ask you this question:  
13:34:33 14 Do you know why your company uses  
13:34:37 15 flavorings and casings in the  
13:34:43 16 manufacturing of cigarettes?

13:34:43 17 MR. MUEHLBERGER: Object to  
13:34:46 18 the form.

13:34:46 19 A. I think a lot of it is  
13:34:46 20 traditional. I don't think there is  
13:34:49 21 any question they add to the positive  
13:34:52 22 flavor of the cigarettes.

13:34:53 23 Q. Well, it also makes it more  
13:34:57 24 inhalable, too, doesn't it?

13:34:57 25 MR. MUEHLBERGER: Object to

13:35:07 1 the form.

13:35:07 2 A. I would say if you are talking

13:35:07 3 about burley tobacco, it's almost

13:35:07 4 inhalable in any form -- uninhalable --

13:35:07 5 put sugar on it, it gets better. I

13:35:11 6 think flue-cured and oriental, they are

13:35:17 7 inhalable. They don't taste that

13:35:19 8 great.

13:35:37 9 Q. Do these additives you just

13:35:37 10 described increase the nicotine

13:35:37 11 absorption?

13:35:37 12 MR. MUEHLBERGER: Object to

13:35:37 13 the form.

13:35:37 14 A. I personally don't know of any

13:35:37 15 chemical reaction that does that in any

13:35:39 16 of these flavors we put on.

13:35:42 17 Q. What does high porosity paper

13:35:46 18 used in cigarette manufacture do for

13:35:49 19 the cigarette?

13:35:53 20 A. Well, there is a

13:35:54 21 misunderstanding.

13:35:58 22 There is high permeability

13:35:69 23 paper and high porosity paper. High

13:36:13 24 permeability paper lets a lot of the

13:36:13 25 outside air go through it.

Produced by RTRIC

13:36:13 1 High porosity paper has a lot  
13:36:13 2 of like void areas in it and sometimes  
13:36:15 3 they are interchanged, so I'm not sure  
13:36:18 4 which one you want me to answer.  
13:36:21 5 Q. Does it make the product more  
13:36:23 6 inhalable for the smoker --  
13:36:23 7 MR. MUEHLBERGER: Object to  
13:36:25 8 the form.  
13:36:25 9 A. I think ventilation in general  
13:36:27 10 reduces the total output of the  
13:36:31 11 cigarette, the gas phase and the tar  
13:36:34 12 and nicotine, and lower products --  
13:36:36 13 lower delivery products -- are, in my  
13:36:39 14 mind anyway -- easier to inhale.  
13:36:57 15 Q. You are familiar as a  
13:36:57 16 scientist with various products that  
13:37:01 17 are tobacco or otherwise with material  
13:37:01 18 safety data sheets, aren't you?  
13:37:01 19 MR. MUEHLBERGER: Object to  
13:37:01 20 the form.  
13:37:01 21 A. I know what they are. I have  
13:37:05 22 looked at them on occasion, yes.  
13:37:08 23 Q. Why have there never been any  
13:37:09 24 MSDSs provided for users of tobacco?  
13:37:09 25 MR. MUEHLBERGER: Object to

Produced by RRTC

13:37:14 1 the form.  
13:37:14 2 A. These things are for  
13:37:16 3 individual compounds that one of the  
13:37:21 4 agencies or Universities have worked  
13:37:23 5 out lots of research on. I mean, there  
13:37:26 6 is certainly an MSDA for nicotine, for  
13:37:31 7 instance; but when you talk about four  
13:37:34 8 or five thousand compounds, many of  
13:37:37 9 which probably have only been seen on  
13:37:38 10 some kind of an instrument, I think to  
13:37:41 11 do them all would be a really big  
13:37:43 12 project.  
13:37:44 13 Q. Yet, as a scientist and an  
13:37:46 14 expert on cigarette manufacture you're  
13:37:46 15 aware, and you've testified, that there  
13:37:51 16 are all these carcinogens and toxins  
13:37:51 17 and what are considered to be hazardous  
13:37:53 18 substances by the EPA in every  
13:37:56 19 cigarette, and yet they are required to  
13:37:58 20 be on MSDA sheets in other context,  
13:38:02 21 correct?  
13:38:02 22 MR. MUEHLBERGER: Object to  
13:38:03 23 the form.  
13:38:03 24 A. I think I can find all the  
13:38:05 25 compounds we talked about on an MSDA

TESTIMONY  
Produced by ESI

13:38:10 1 sheet somewhere. Maybe on a Merck  
13:38:13 2 Index.

13:38:13 3 Q. Sure?

13:38:13 4 A. Which by the way, those are  
13:38:14 5 publications.

13:38:14 6 Q. But your company has never  
13:38:16 7 published any or used MSDA sheets on  
13:38:20 8 any of these compounds, have you?

13:38:20 9 MR. MUEHLBERGER: Object to  
13:38:27 10 the form.

13:38:27 11 A. We have them available on all  
13:38:27 12 the things for employees. I don't  
13:38:29 13 remember us sending them out in general  
13:38:32 14 to people. The answer would be no.

13:38:32 15 Q. You never used the vehicle of  
13:38:33 16 your POLs to apprise people of the  
13:38:36 17 various compounds that are  
13:38:36 18 carcinogenic, or the toxins, or the  
13:38:39 19 hazards in your products, correct?

13:38:39 20 MR. MUEHLBERGER: Object to  
13:38:44 21 the form.

13:38:44 22 A. Not in POL, no.

13:38:48 23 Q. Or in any other context like  
13:38:48 24 that?

13:38:48 25 MR. MUEHLBERGER: Object to

Produced by  
ERIC

13:38:48 1 the form.  
13:38:48 2 A. We put warnings labels on  
13:38:51 3 POLs.  
13:38:54 4 Q. Because the Federal Government  
13:38:55 5 requires you to, correct?  
13:38:55 6 MR. MUEHLBERGER: Object to  
13:38:57 7 the form.  
13:38:57 8 A. Yes, they do.  
13:38:58 9 BY MR. HOPPER:  
13:39:07 10 Q. You have been at Philip Morris  
13:39:09 11 in R & D for thirty-five years,  
13:39:11 12 correct?  
13:39:11 13 A. Yes.  
13:39:22 14 Q. Are you aware of a gentleman's  
13:39:19 15 agreement between Philip Morris and the  
13:39:19 16 other tobacco companies to strike an  
13:39:21 17 agreement between them to avoid  
13:39:24 18 conducting any biological research on  
13:39:36 19 the health effects of smoking?  
13:39:36 20 MR. MUEHLBERGER: Object to  
13:39:36 21 the form.  
13:39:36 22 A. I am familiar only in that I  
13:39:36 23 believe in getting ready for the  
13:39:36 24 Minnesota trial, that was brought up to  
13:39:37 25 me.

Processed by RRTC

13:39:37 1 Q. And you testified earlier that  
13:39:39 2 you and Dr. Tom Osdene came into the  
13:39:42 3 company at about the same time?  
13:39:42 4 A. We actually walked through the  
13:39:47 5 door at the same time, yes.  
13:39:47 6 Q. Are you aware of conversations  
13:39:47 7 he had with your colleagues in Cologne  
13:39:50 8 regarding this gentleman's agreement?  
13:39:50 9 MR. MUEHLBERGER: Object to  
13:39:53 10 the form.  
13:39:53 11 A. Not explicitly. You have to  
13:39:56 12 give me some more information.  
13:39:56 13 BY MR. HOPPER:  
13:39:58 14 Q. Are you aware of the fact that  
13:40:02 15 he instructed the R & D Department to  
13:40:04 16 send documents on biological research  
13:40:08 17 over to Cologne and lock them up?  
13:40:08 18 MR. MUEHLBERGER: Object to  
19 the form.  
20 A. I'm familiar with that. I  
21 don't know what was behind that.  
22 BY MR. HOPPER:  
23 Q. Are you familiar with his --  
24 MR. MUEHLBERGER: Object --  
25 MR. HOPPER: I apologize.

Produced by  
FBI  
LABORATORY

1           Sorry. He wasn't finished.  
2           MR. MUEHLBERGER: Yeah. And  
3           let me just again object to the  
4           form, because in the context of  
5           cross-examination, he might have  
6           seen these documents and I don't  
7           want the record to indicate he saw  
8           them in some other context.  
9           MR. HOPPER: Well taken.  
10          BY MR. HOPPER:  
11          Q. Go ahead, Doctor. I'm  
12          sorry --  
13          A. I'm saying that any business,  
14          particularly the research business, we  
15          keep all of our documents.  
16          BY MR. HOPPER:  
17          Q. Is it normal course of  
18          business that Mr. Osdene would instruct  
19          people to send documents to his home  
20          where he could destroy them?  
21           MR. MUEHLBERGER: Object to  
22           the form.  
23           A. I would say that I normally  
24          don't do that.  
25           Q. You don't do that, I'm sure.

Produced by RTRIC

13:40:50 1 Is it normal course of  
13:40:52 2 business for the head of R & D to  
13:40:55 3 instruct people that work for him to  
13:40:58 4 send documents to his home so he could  
13:41:01 5 destroy them?

13:41:01 6 MR. MUEHLBERGER: Object to  
13:41:02 7 the form.

13:41:02 8 A. I can see that he might want  
13:41:05 9 to send some to his home. I,  
13:41:20 10 obviously, am against destroying any  
13:41:22 11 document.

13:41:23 12 Q. Is it technically feasible  
13:41:26 13 today to design a cigarette which would  
13:41:30 14 not cause an increase in cancer,  
13:41:35 15 emphysema, asthma, heart failure, or  
13:41:38 16 other smoking-related diseases?

13:41:38 17 MR. MUEHLBERGER: Object to  
13:41:40 18 the form.

13:41:40 19 A. Given some time and money and  
13:41:40 20 some smart people, I think we can take  
13:41:44 21 all the compounds out.

13:41:47 22 Q. How about unfaltering  
13:41:49 23 determination?

13:41:49 24 A. Smart people with unfaltering  
13:41:50 25 determination, we can get the compounds

Produced by RJKC  
REDACTED  
REDACTED  
REDACTED

13:41:50 1 out.

13:41:51 2 Q. But somehow from 1961 until  
13:41:52 3 2001 nearly, you haven't been able to  
13:41:54 4 come up with the money, time and  
13:41:56 5 unfaltering determination; is that  
13:41:56 6 true?

13:41:59 7 MR. MUEHLBERGER: Object to  
13:41:59 8 the form.

13:42:00 9 A. I would argue we had  
13:42:02 10 unfaltering determination. I would  
13:42:05 11 also argue that the scientific  
13:42:11 12 community has been trying to reduce  
13:42:11 13 PAHs in other areas for about a hundred  
13:42:14 14 years.

13:42:15 15 But I think we can do that. I  
13:42:20 16 think we are on the road to do that.

13:42:27 17 Q. If you took the nicotine out,  
13:42:27 18 would people probably stop smoking?

13:42:27 19 MR. MUEHLBERGER: Object to  
13:42:27 20 the form.

13:42:30 21 A. I only have one experiment to  
13:42:30 22 go by, and we took it out, and I will  
13:42:33 23 say people didn't buy it.

13:42:36 24 Q. And they would, therefore, not  
13:42:38 25 be exposed to the PAHs and other

13:42:41 1 carcinogens, true.

13:42:41 2 MR. MUEHLBERGER: Object to

13:42:43 3 the form.

13:42:43 4 A. There is no question, if no

13:42:43 5 one smoked, you wouldn't have those, at

13:42:43 6 least in cigarette smoke. Time you

13:42:51 7 cooked the steak, you'd still have

13:42:51 8 them.

13:42:51 9 Q. You're not challenging me to

13:42:53 10 go through the entire list of all the

13:42:54 11 various compounds and determine what is

13:42:57 12 in cigarettes and what is in a steak

13:43:01 13 now, are you, Doctor?

13:43:01 14 MR. MUEHLBERGER: Object to

13:43:02 15 the form.

13:43:02 16 A. No, I'm not.

13:43:02 17 BY MR. HOPPER:

13:43:02 18 Q. Okay. Thank you. I didn't

13:43:04 19 think you were.

13:43:04 20 I'll enter, just so I'm being

13:43:08 21 a good lawyer, my objection to the

13:43:08 22 witness as nonresponsive with that last

13:43:12 23 comment.

13:43:19 24 If tobacco farmers were to

13:43:20 25 reduce the use of nitrogen fertilizer

Produced by  
HOPPER

13:43:24 1 on their tobacco crops, could this have  
13:43:29 2 an effect on the oxides of nitrogen and  
13:43:32 3 could those be drastically reduced in  
13:43:36 4 your products?

13:43:36 5 MR. MUEHLBERGER: Object to  
13:43:37 6 the form.

13:43:37 7 A. Well, I think that there is no  
13:43:39 8 question that farmers put too much  
13:43:42 9 potassium nitrate in their soil, and  
13:43:46 10 they do that to try to get yield out,  
13:43:50 11 and I don't think there is any question  
13:43:54 12 that nitrogen oxides come from burning  
13:43:54 13 nitrate. I don't know how much they  
13:43:57 14 could reduce it but it would certainly  
13:44:01 15 take it down.

13:44:02 16 Q. Has Philip Morris taken any  
13:44:05 17 steps in the thirty-five years you have  
13:44:07 18 been there to set standards for those  
13:44:11 19 farmers to reduce the use of nitrogen  
13:44:11 20 fertilizers?

13:44:11 21 MR. MUEHLBERGER: Object to  
13:44:12 22 the form.

13:44:12 23 A. I think there has been lots of  
13:44:14 24 discussions with the farmers about  
13:44:17 25 moderating those. I think it has met

Submitted by  
John C. Morris

ERIC  
Produced by  
ERIC

13:44:20 1 with not very high success.  
13:44:24 2 Q. Is the technology available  
13:44:34 3 today to reduce gases in the gas phase  
13:44:34 4 delivery of cigarettes?  
13:44:34 5 MR. MUEHLBERGER: Object to  
13:44:34 6 the form.  
13:44:34 7 A. Well, there is, you know,  
13:44:34 8 charcoal, plain old charcoal like  
13:44:36 9 briquettes that you burn, does a pretty  
13:44:39 10 good job of reducing gases, not  
13:44:42 11 selectively. You take them all out,  
13:44:46 12 broad spectrum.  
13:44:47 13 You have got to put an awful  
13:44:50 14 lot of that in there to get where I  
13:44:53 15 would like to see them. Enough that  
13:44:56 16 probably the cigarettes would -- kind  
13:45:04 17 of tilt that way. I think there are  
13:45:04 18 more sophisticated ways to do it, and I  
13:45:04 19 think we are approaching those in a  
13:45:05 20 number of universities today, but  
13:45:05 21 that's a way to get the gases down.  
13:45:41 22 MR. HOPPER: Let's take a  
13:45:42 23 break.  
13:45:46 24 VIDEOPHOTOGRAPHER: We are going  
13:45:46 25 off the record at 1:45.

Produced by R.R.T.C

13:54:43 1 (Off record.)  
13:54:44 2 VIDEOGRAPHER: We are back on  
13:54:46 3 the record at 1:54.  
13:54:46 4 BY MR. HOPPER:  
13:54:48 5 Q. Dr. Lilly, do you recognize  
13:54:53 6 Dietrich Hoffmann or Hoffmann and  
13:54:53 7 Wynder as the eminent and authoritative  
13:55:01 8 source and expert on the toxicology of  
13:55:01 9 tobacco smoke.  
13:55:01 10 MR. MUEHLBERGER: Object to  
13:55:02 11 the form.  
13:55:04 12 A. I certainly recognize them as  
13:55:08 13 being giants in the field of developing  
13:55:13 14 that work. I think they are both maybe  
13:55:13 15 aging a bit today.  
13:55:13 16 BY MR. HOPPER:  
13:55:19 17 Q. Well, we are all doing that,  
13:55:19 18 aren't we?  
13:55:20 19 A. I sure am.  
13:55:21 20 Q. You're not here testifying  
13:55:25 21 today that aging and becoming decrepit  
13:55:29 22 here is going to affect your opinion?  
13:55:34 23 A. I take that back.  
13:55:35 24 Q. You recovered well.  
13:55:42 25 Have you had a chance to, I

Produced by RJE

13:55:44 1 assume you haven't or you would have  
13:55:46 2 told me earlier when I asked you  
13:55:46 3 questions of what you read to prepare  
13:55:48 4 for this deposition, have you read Dr.  
13:55:52 5 Whidby's deposition?

13:55:53 6 A. No, I haven't read any  
13:55:57 7 depositions.

13:55:57 8 Q. Have you ever read the  
13:55:57 9 article, "The Changing Cigarette, 1950  
13:56:00 10 to 1955 by Dietrich Hoffman and Ilse  
13:56:04 11 Hoffmann?"

13:56:05 12 A. Yes, I remember reading that  
13:56:16 13 article.

13:56:16 14 Q. From the Journal of Toxicology  
13:56:16 15 and Environmental Health?

13:56:16 16 A. Yes.

13:56:16 17 Q. I believe it was within 1997,  
13:56:16 18 do you recall.

13:56:16 19 A. It was within the last three  
13:56:16 20 or four years, yeah.

13:56:18 21 Q. I believe in that article they  
13:56:20 22 referenced the fact, or at least raise  
13:56:25 23 the question, why not completely remove  
13:56:26 24 nicotine from cigarettes. What do you  
13:56:28 25 say about that?

Produced by  
ERIC

13:56:28 1 MR. MUEHLBERGER: Object to  
13:56:29 2 the form.  
13:56:30 3 A. I remember reading that. The  
13:56:33 4 only comment that I can make, I mean, I  
13:56:36 5 was in Germany for eighteen months  
13:56:38 6 working out a process to do that, which  
13:56:41 7 I thought was a pretty successful  
13:56:44 8 process.  
13:56:44 9 Q. What, if you don't mind me  
13:56:45 10 interrupting, and ask you just what was  
13:56:45 11 that process or project?  
13:56:48 12 A. That was the denic project  
13:56:52 13 with where we used supercritical  
13:56:57 14 carbon dioxide to extract nicotine.  
13:56:57 15 Q. I thought it was, I just  
13:56:58 16 wanted to be sure. Don't let me cut  
13:56:58 17 you off.  
13:56:58 18 A. Well, at least in that  
13:57:01 19 experiment -- and I wasn't part of the  
13:57:05 20 decision -- the cigarettes didn't sell.  
13:57:08 21 Q. Is that because the primary  
13:57:11 22 dependence producing constituent in  
13:57:18 23 tobacco is nicotine?  
13:57:21 24 MR. MUEHLBERGER: Objection.  
13:57:21 25 Asked and answered about three

Produced by RTIC

13:57:22 1 times.  
13:57:23 2 A. Well, nicotine is certainly  
13:57:26 3 what scientists would point to as the  
13:57:29 4 lack of it being the reason. I also  
13:57:34 5 thought they tasted bad, as an aside.  
13:57:34 6 BY MR. HOPPER:  
13:57:36 7 Q. Does a smoker compensate for a  
13:57:39 8 low-nicotine and/or low-tar cigarette  
13:57:43 9 by smoking more intensely?  
13:57:47 10 MR. MUEHLBERGER: Object to  
13:57:47 11 the form.  
13:57:53 12 A. I don't know what the research  
13:57:53 13 is out there on that. I think one of  
13:57:53 14 the things with cigarettes, it's pretty  
13:58:02 15 hard to smoke them intensely, because  
13:58:02 16 the pressure drop rises as you try to  
13:58:02 17 do that to kind of counteract that.  
13:58:02 18 So, you have to overcome some physics  
13:58:06 19 to do that.  
13:58:08 20 BY MR. HOPPER:  
13:58:09 21 Q. That's something you certainly  
13:58:16 22 know about?  
13:58:16 23 A. Yeah.  
13:58:16 24 Q. Does that relate to low  
13:58:16 25 filtration -- to low drop filtration

13:58:20      1 cigarettes and does that affect the  
13:58:26      2 absorption of nicotine?  
13:58:26      3                            MR. MUEHLBERGER: Object to  
13:58:26      4 the form.  
13:58:26      5                            A. I think all those things you  
13:58:28      6 put in on what the pressure drop of  
13:58:30      7 filters and their dynamic thing only  
13:58:40      8 has to do with how much you are able to  
13:58:40      9 get in a particular puff out of the  
13:58:40      10 cigarette.  
13:58:41      11                            Q. Does the combination -- since  
13:58:45      12 you are on filters -- does the  
13:58:51      13 combination of filters of cellulose,  
13:59:03      14 acetate and charcoal remove more tar  
13:59:03      15 than either one alone?  
13:59:03      16                            MR. MUEHLBERGER: Objection as  
13:59:03      17 to form.  
13:59:03      18                            A. Well, I answer that, I mean,  
13:59:03      19 it depends on what form the charcoal  
13:59:03      20 is. There's a tendency in the last few  
13:59:06      21 years to sprinkle the charcoal in the  
13:59:12      22 cellulose acetate and I would say there  
13:59:13      23 negative, it doesn't really remove any  
13:59:19      24 more than some of the gases.  
13:59:20      25                            And the old technique of

Produced by Right To Know Software

13:59:23     1    actually filling a cavity full of  
13:59:23     2    charcoal, I would say there, you did  
13:59:29     3    remove some tar along with the gases.  
13:59:29     4    So, it depends on what form you are  
13:59:31     5    doing it -- putting it in.

13:59:31     6    BY MR. HOPPER:

13:59:33     7    Q.    Do any of Philip Morris brands  
13:59:36     8    have those combination filters?

13:59:36     9    MR. MUEHLBERGER:   Object to  
13:59:40     10   the form.

13:59:40     11   A.    All of our brands we sell in  
13:59:42     12   Japan have charcoal filters.

13:59:44     13   Q.    Do they have a combination of  
13:59:47     14   charcoal and cellulous acetate?

13:59:47     15   A.    They do have a combination of  
13:59:50     16   charcoal and cellulose acetate.

13:59:52     17   There are only a few brands  
13:59:54     18   in the United States that do, and if I  
13:59:59     19   remember correctly, maybe one of the  
14:00:00     20   Parliament cigarettes.

14:00:01     21   And we used to have  
14:00:01     22   Multi-Filter that was a charcoal brand.

14:00:05     23   But they are less prevalent in the  
14:00:08     24   U.S.

14:00:17     25   Q.    Is it true -- I see from your

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14:00:22 1 expert report and your statement of  
14:00:26 2 opinion that in addition to be listed  
14:00:29 3 as an expert and a fact witness for the  
14:00:33 4 particular field that you occupy as a  
14:00:36 5 physicist and all those items we  
14:00:44 6 covered -- the construction of  
14:00:44 7 cigarettes, smoke formation -- I won't  
14:00:46 8 take up the time on the record to go  
14:00:49 9 back and identify all of those -- that  
14:00:52 10 you have also listed yourself as an  
14:00:57 11 expert and fact witness among other  
14:00:59 12 issues.

14:01:02 13 What are those other issues  
14:01:02 14 that we haven't covered?

14:01:05 15 A. My sense of what I was saying  
14:01:08 16 there is, I think I'm pretty much  
14:01:12 17 expert on the State of the Art in  
14:01:20 18 Science and Technology in the world. I  
14:01:20 19 spend a lot of time doing that. And I  
14:01:20 20 know a hugh number of researchers in  
14:01:22 21 the field.

14:01:23 22 So, I think I'm able to go out  
14:01:26 23 and bring new technology in.

14:01:30 24 You mentioned I looked like a  
14:01:33 25 metallurgist but that was bringing some

Produced by R.R.K.

14:01:36 1 metal alloys in.  
14:01:39 2 Q. In what areas will you be  
14:01:42 3 asked by Philip Morris to be produced  
14:01:45 4 as a fact witness as compared to an  
14:01:48 5 expert witness?  
14:01:49 6 MR. MUEHLBERGER: Object to  
14:01:49 7 the form.  
14:01:49 8 A. I don't know. I know that --  
9 Q. Excuse me one second.  
10 A. Oh, I'm sorry.  
11 MR. MUEHLBERGER: Let him  
12 finish.  
13 BY MR. HOPPER:  
14 Q. I think there was just  
15 misunderstanding on both our parts.  
16 You don't know. And then you  
17 were going to say -- excuse me.  
18 A. I don't know, and I was going  
19 to say that clearly the things that I  
20 can, like the denic, perforation  
21 programs, nonconventional cigarette  
22 programs, it's pretty clear I know a  
23 lot about those things and I can answer  
24 facts probably as good as anyone around  
25 on those.

Produced by RJRC

14:02:27 1 That is what I intended to  
14:02:27 2 say. I'm sorry.  
14:02:28 3 Q. That's all right.  
14:02:28 4 When you said I don't know, I  
14:02:30 5 was thinking you were finished.  
14:02:34 6 Have you listed every single  
14:02:37 7 area in your Statement of Opinion that  
14:02:40 8 Philip Morris has told you that they  
14:02:43 9 wish to have you testify or to be  
14:02:46 10 prepared to testify in?  
14:02:50 11 A. I think so.  
14:02:52 12 I mean, what I haven't  
14:02:55 13 mentioned is some of our new science  
14:02:58 14 that we are trying to put into products  
14:03:01 15 but I had kind of mentioned it as we've  
14:03:04 16 gone through the day.  
14:03:09 17 Q. So, it would be your testimony  
14:03:09 18 today that everything I've asked you  
14:03:11 19 about in your expert witness report,  
14:03:11 20 your Statement of Opinion, is  
14:03:11 21 conclusive and exhaustive of those  
14:03:16 22 areas Philip Morris is calling you to  
14:03:20 23 testify in?  
14:03:20 24 MR. MUEHLBERGER: Object to  
14:03:20 25 the form.

Produced by R.R.T.C

14:03:21 1 A. In my mind, yes.  
14:03:22 2 Q. Did you believe that's the  
14:03:23 3 case for Philip Morris?  
14:03:26 4 MR. MUEHLBERGER: Object to  
14:03:27 5 the form.  
14:03:27 6 A. I can only say what I know and  
14:03:31 7 have been told, that's all.  
14:03:33 8 Q. Attorneys like to operate on  
14:03:36 9 the no surprises doctrine --  
14:03:39 10 A. Right. So do I.  
14:03:41 11 Q. -- and it's important for me  
14:03:43 12 to understand if you're going to  
14:03:43 13 testify beyond the scope of those items  
14:03:43 14 that you've identified in your report,  
14:03:43 15 I need to know about those today.  
14:03:45 16 So, the question is, trying to  
14:03:50 17 find out if they are other issues or  
14:03:51 18 other areas of either fact or expertise  
14:03:54 19 that you may be called to testify  
14:03:58 20 about?  
14:03:58 21 A. The only thing I can say, and  
14:04:01 22 again, the I don't know still holds. I  
14:04:05 23 mean, I'm in charge of finding emerging  
14:04:09 24 technology to help us remove compounds  
14:04:16 25 from smoke. Those are things we're

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14:04:16 1 working on hard today. None of those  
14:04:17 2 things have been commercialized yet,  
14:04:17 3 but I really can't say when the plans  
14:04:19 4 are to do that.

14:04:21 5 And it's exciting stuff, at  
14:04:24 6 least to me. It might be boring to  
14:04:27 7 everyone else, but that is trying to  
14:04:30 8 develop lower-risk cigarettes.

14:04:33 9 Q. Have you been told that after  
14:04:35 10 your deposition in this case that you  
14:04:39 11 will be doing further preparation for  
14:04:39 12 trial?

14:04:45 13 MR. MUEHLBERGER: Object to  
14:04:46 14 the form.

14:04:46 15 A. I haven't been told anything.

14:04:46 16 BY MR. HOPPER:

14:04:49 17 Q. Have you worked with any jury  
14:04:51 18 consultants or any speech coaches or  
14:04:56 19 with anyone to groom you in your  
14:04:59 20 preparation for this deposition?

14:04:59 21 MR. MUEHLBERGER: Object to  
14:05:01 22 the form.

14:05:01 23 A. No.

14:05:02 24 Q. Or for further preparation for  
14:05:07 25 trial?

14:05:07 1 A. No.

14:05:07 2 Q. Have you inquired as to any

14:05:12 3 mock trials or mock juries or focus

14:05:15 4 groups?

14:05:16 5 MR. MUEHLBERGER: Object to

14:05:18 6 the form.

14:05:19 7 A. Years ago, I had a mock trial.

14:05:22 8 I think it was maybe before the

14:05:27 9 Minnesota thing. It was up here.

14:05:27 10 BY MR. HOPPER:

14:05:27 11 Q. Have you done any test runs to

14:05:30 12 prepare for the deposition? Any

14:05:32 13 cross-examinations, or give-and-take

14:05:36 14 with attorneys, or your attorney,

14:05:38 15 Mr. Muehlberger, for this deposition?

14:05:43 16 A. No.

14:05:43 17 Q. When you met for the hour, you

14:05:45 18 didn't cover anything like that or try

14:05:48 19 out any questions or anything?

14:05:57 20 A. No, we did not.

14:06:25 21 Q. Beyond the list of documents

14:06:25 22 that you have produced that we have

14:06:25 23 submitted as an exhibit in this

14:06:27 24 deposition -- and I apologize I don't

14:06:30 25 remember the exhibit number for the

Produced by RICOH  
IMAGE  
SYSTEMS

Produced by RITIC

14:06:33 1 record, perhaps it's Number Four --  
14:06:35 2 reliance documents -- are there any  
14:06:38 3 other learned treatise, or published  
14:06:42 4 treatise, or periodicals, or pamphlets,  
14:06:44 5 or any other documents of any kind on  
14:06:55 6 any subject, be it history, or  
14:06:55 7 medicine, or science, or art, that  
14:06:55 8 relate to your scope of testimony that  
14:06:55 9 you would rely upon in tendering your  
14:07:01 10 opinions today, or later at trial?  
14:07:03 11 MR. MUEHLBERGER: Object to  
14:07:03 12 the form  
14:07:04 13 BY MR. HOPPER:  
14:07:04 14 Q. That we should know about?  
14:07:09 15 A. I don't think so. The  
14:07:09 16 documents listed there were  
14:07:10 17 descriptions of how we did denic, how  
14:07:10 18 we've done the nonconventional  
14:07:14 19 cigarettes, and a lot on Accord, which  
14:07:16 20 are the things that I would expect to  
14:07:20 21 be testifying on.  
14:07:21 22 And then you have a list of my  
14:07:23 23 publications that are all kind of  
14:07:26 24 related more to Accord, as you pointed  
14:07:29 25 out with your metals thing, but we have

14:07:33 1 been very open at publishing those  
14:07:36 2 things.

14:07:42 3 Q. Obviously, Philip Morris began  
14:07:42 4 tracking the introduction into the  
14:07:43 5 marketplace of alternative delivery  
14:07:45 6 systems for nicotine -- nicotine  
14:07:48 7 replacement therapy, patches and those  
14:07:52 8 type of products -- has Philip Morris  
14:07:55 9 begun to work on any of those types of  
14:07:57 10 products?

14:07:57 11 MR. MUEHLBERGER: Object to  
14:07:57 12 the form.

14:08:00 13 A. No, they haven't started to  
14:08:03 14 work on them. Every year, I hear  
14:08:08 15 discussion about them but the answer  
14:08:10 16 is, no, we haven't started to work on  
14:08:10 17 those.

14:08:10 18 We have been tracking them,  
14:08:14 19 you are exactly right. They get  
14:08:15 20 tracked and they got tracked actually a  
14:08:21 21 long time ago.

14:08:21 22 But no, I have heard of no  
14:08:23 23 plans to start doing any of that.

14:08:28 24 Q. So, it's your understanding  
14:08:28 25 that Philip Morris' principal nicotine

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14:08:32 1 delivery device that it will continue  
14:08:34 2 to market is the cigarette?

14:08:34 3 MR. MUEHLBERGER: Object to  
14:08:35 4 the form.

14:08:36 5 A. Well, we will continue to  
14:08:37 6 market the cigarette, obviously.

14:08:39 7 We also continue to improve  
14:08:43 8 and make better the Accord system,  
14:08:49 9 because that is the one where we have  
14:08:49 10 all the chemistry where we want it. We  
14:08:54 11 have to convince people to buy it.

14:08:54 12 Q. Going back to Accord for a  
14:08:54 13 second, because I don't believe I asked  
14:08:56 14 you this question.

14:08:56 15 If the Accord product is not  
14:09:01 16 built or constructed, as you've used  
14:09:04 17 the term in your expert report, on the  
14:09:07 18 basis of pyrolysis of tobacco, does the  
14:09:11 19 regular smoker still inhale smoke?

14:09:13 20 A. Yes.

14:09:15 21 And don't get me wrong, we do  
14:09:18 22 part of the pyrolysis. Pyrolysis goes  
14:09:22 23 like that, and then comes over in a  
14:09:24 24 regular -- we just cut the temperature  
14:09:26 25 off so we only get part of that.

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Reviewed by RTRIC

14:09:29 1 So, we don't get any of the  
14:09:31 2 high temperature compounds. What are  
14:09:35 3 the high temperature compounds -- PAHs  
14:09:35 4 benzenes, things like that.

14:09:37 5 Q. Nitrosamines?

14:09:39 6 A. It's kind of in the middle.  
14:09:43 7 We take most of those out but not all.  
14:09:47 8 The smoker draws into his mouth and  
14:09:47 9 lung smoke.

14:09:49 10 Q. So, they're still exposed to  
14:09:56 11 carbon monoxide and to the irritating  
14:09:59 12 effects of smoke itself, correct?

14:10:01 13 A. Carbon monoxide is essentially  
14:10:03 14 gone. It's a high temperature  
14:10:04 15 compound. But there are loads of  
14:10:05 16 compounds there. We have reduced them  
14:10:08 17 a lot but they are still there.

14:10:21 18 Q. I assume from the answer you  
14:10:21 19 gave me earlier when I asked you about  
14:10:21 20 preparation for this deposition, you  
14:10:23 21 haven't read any of the Scott plaintiff  
14:10:28 22 expert witness reports prepared for  
14:10:30 23 this litigation?

14:10:33 24 A. No. I have actually read  
14:10:34 25 nothing about this case.

14:10:37 1 Q. Do you know who any of those  
14:10:39 2 expert witnesses are?  
14:10:40 3 A. No, sir.  
14:10:41 4 Q. Do you know Bill Farone?  
14:10:42 5 A. Yes. I used to work for Bill  
14:10:50 6 Farone.  
14:10:50 7 Q. Are you aware that he's an  
14:10:50 8 expert witness in this case testifying  
14:10:51 9 on behalf of the plaintiffs?  
14:10:54 10 A. No, but I know he has been in  
14:10:55 11 other cases I've been in.  
14:10:56 12 Q. Is this the first time you  
14:10:59 13 have been made aware he is an expert  
14:11:02 14 witness on behalf of the plaintiffs?  
14:11:04 15 A. Yes.  
14:11:05 16 Q. Do you have an opinion of Dr.  
14:11:07 17 Farone, having worked for him?  
14:11:07 18 MR. MUEHLBERGER: Object to  
14:11:10 19 the form.  
14:11:10 20 A. My opinion is, most people  
14:11:11 21 know he is a very good friend of mine  
14:11:14 22 and a very good scientist. I enjoyed  
14:11:14 23 working with Bill.  
14:11:19 24 Q. Do you still speak with him?  
14:11:22 25 A. Haven't seen him for at least

Produced by READING HELPER

14:11:36

1 twelve years.

14:11:47

2 Q. For the record and for the

14:11:49

3 Jury, can you tell me what you know

14:11:52

4 about crop protection agents. First of

14:11:55

5 all, what are they?

14:11:57

6 MR. MUEHLBERGER: Object to  
7 the form.

14:11:58

8 A. I assume you are talking about

14:12:00

9 what I would call pesticides, which by

14:12:07

10 the way, I don't think is bad in all

14:12:08

11 contexts.

14:12:12

12 What do I know about them? I

14:12:16

13 mean, other than helping my wife do

14:12:18

14 gardening, very little.

14:12:21

15 Q. Is a CPA, or crop protection

14:12:24

16 agent, just kind of an euphemism for

14:12:31

17 agricultural chemical residue?

14:12:31

18 MR. MUEHLBERGER: Object to

14:12:31

19 the form.

14:12:31

20 A. It's a set of -- it's an

14:12:36

21 acronym for things that farmers put on

14:12:40

22 to keep both pests away from their

14:12:43

23 tobacco, keep it from blooming into

14:12:48

24 flowers. All kinds of stuff.

14:12:57

25 Q. Does that include pesticides,

Produced by  
RCF

14:12:57 1 herbicides, fungicides, rodenticides?  
14:12:57 2 MR. MUEHLBERGER: Object to  
14:12:57 3 the form.  
14:12:57 4 A. It's going far beyond my  
14:12:59 5 knowledge, but I think so.  
14:13:06 6 Q. Is it your knowledge, based on  
14:13:08 7 your study of the physics and chemistry  
14:13:16 8 of cigarettes that you worked on when  
14:13:19 9 you were a senior scientist and perhaps  
14:13:23 10 later, that you are aware of which of  
14:13:26 11 those various pesticides, herbicides,  
14:13:31 12 rodenticides, fungicides, are taken up  
14:13:32 13 into your tobacco products, and it  
14:13:38 14 could be a promoter or a causative  
14:13:40 15 agent of disease in humans?  
14:13:40 16 MR. MUEHLBERGER: Object to  
14:13:41 17 the form.  
14:13:42 18 A. I'm not just familiar enough  
14:13:44 19 to even make a comment on that. I'm  
14:13:47 20 just not familiar.  
14:13:48 21 Q. Who in your company would be?  
14:13:51 22 MR. MUEHLBERGER: Object to  
14:13:52 23 the form.  
14:13:53 24 A. Well, our Leaf Department has  
14:13:54 25 a number of agronomists who would be my

Produced by R.R.K.C.

14:13:59      1    guess as being certainly closer to that  
14:14:03      2    type of thing.  
14:14:03      3    BY MR. HOPPER:  
14:14:04      4    Q.    Do you know what research  
14:14:05      5    Philip Morris has done about the  
14:14:07      6    effects of crop protection agents or  
14:14:10      7    agricultural chemical residue in  
14:14:10      8    cigarettes?  
14:14:10      9    MR. MUEHLBERGER:   Object to  
14:14:15      10   the form.  
14:14:15      11   A.    The only research that -- and  
14:14:17      12   I'm not even sure we are even doing  
14:14:20      13   it -- Kobak, which was to protect the  
14:14:23      14   tobacco in storage against the tobacco  
14:14:47      15   beetles.  
14:14:47      16   We have used -- and I don't  
14:14:47      17   think we are using it today -- I don't  
14:14:47      18   know how -- we may support research at  
14:14:47      19   the land grant universities .  
14:14:47      20   I'm just not very familiar  
14:14:47      21   with what we do and what we don't  
14:14:47      22   there.  
14:14:47      23   Q.    In your process development  
14:14:47      24   area, have you ever taken steps to  
14:14:47      25   measure the chemical residues from

14:14:51 1 so-called crop protection agents in  
14:14:51 2 your cigarette product?

14:14:51 3 MR. MUEHLBERGER: Object to  
14:14:52 4 the form.

14:14:52 5 A. Well, you are probably going  
14:14:54 6 to be disappointed. I don't measure  
14:15:00 7 very much stuff unless I can shine a  
14:15:01 8 laser at it.

14:15:01 9 I think that all pesticides on  
14:15:01 10 certainly incoming tobacco are measured  
14:15:01 11 twice -- measured in Europe and then  
14:15:11 12 measured by the Department of  
14:15:11 13 Agriculture -- and the tobacco that  
14:15:13 14 farmers grow, I don't know whether we  
14:15:15 15 check them or not.

14:15:21 16 Q. Do you think that -- strike  
14:15:24 17 that.

14:15:27 18 Has Philip Morris ever  
14:15:28 19 produced any product information, or  
14:15:31 20 provided any warning labels, or  
14:15:34 21 information on its product packs to  
14:15:36 22 warn the public of the presence of  
14:15:40 23 various pesticides and other types of  
14:15:44 24 crop protection agents in your  
14:15:47 25 products?

14:15:47 1 MR. MUEHLBERGER: Object to  
14:15:48 2 the form.

14:15:48 3 A. I don't remember seeing  
14:15:49 4 anything.

14:15:50 5 But again, the Agricultural  
14:15:52 6 Department also approves those things.  
14:15:57 7 And EPA. I haven't seen us proactively  
14:16:02 8 do it, no.

14:16:31 9 Q. Earlier you testified that  
14:16:32 10 you're not aware of the presence of  
14:16:35 11 polonium-210 in your products; is that  
14:16:39 12 correct --

14:16:39 13 MR. MUEHLBERGER: Object to  
14:16:39 14 the form.

14:16:39 15 A. Yes  
14:16:40 16 BY MR. HOPPER:

14:16:40 17 Q. Do you believe it's there?

14:16:45 18 A. Do I believe it's there?

14:16:47 19 Well, I believe polonium-210 came from  
14:16:55 20 all of us testing nuclear devices over  
14:16:59 21 the years. And whether it's there or  
14:16:59 22 not depends on where the tobacco, I  
14:17:00 23 guess, is being grown in a place close  
14:17:01 24 to roads and where nuclear fallout can  
14:17:05 25 happen.

14:17:06 1 Q. Are you --  
14:17:08 2 A. Certainly not created in  
14:17:10 3 tobacco.  
14:17:11 4 Q. Or it's not a by-product of  
14:17:15 5 the pyrolysis of tobacco you're saying,  
14:17:18 6 correct?  
14:17:19 7 A. No. But it's not also not in  
14:17:21 8 the tobacco plant being that the  
14:17:24 9 tobacco plant wants it there.  
14:17:24 10 Polonium-210 is a very oddball  
14:17:32 11 compound.  
14:17:32 12 Q. Did you know that polonium-210  
14:17:36 13 causes leukemia?  
14:17:38 14 MR. MUEHLBERGER: Object to  
14:17:39 15 the form.  
14:17:39 16 A. Well, I'm not surprised, but I  
14:17:39 17 think I'd say the same thing about any  
14:17:41 18 fallout of radioactive materials can  
14:17:41 19 cause leukemia.  
14:17:41 20 Q. Benzene is not a product of  
14:17:45 21 radioactive fallout is it?  
14:17:45 22 MR. MUEHLBERGER: Object to  
14:17:48 23 the form.  
14:18:11 24 A. No, sir.  
14:18:11 25 BY MR. HOPPER:

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ELECTRONIC  
IMAGING

produced by RJKC

14:18:11 1 Q. You know that it causes  
14:18:11 2 leukemia?  
14:18:11 3 MR. MUEHLBERGER: Object to  
14:18:11 4 the form.  
14:18:11 5 A. Actually, I do know that.  
14:18:11 6 BY MR. HOPPER:  
14:18:11 7 Q. And that is in your product,  
14:18:11 8 correct?  
14:18:11 9 MR. MUEHLBERGER: Object to  
14:18:11 10 the form.  
14:18:11 11 BY MR. HOPPER:  
14:18:11 12 A. That's certainly created in  
14:18:11 13 pyrolysis of tobacco.  
14:18:11 14 Q. Thank you.  
14:18:11 15 Are you aware that cellulose  
14:18:11 16 acetate cigarette filter fibers are  
14:18:11 17 found in pulmonary tissue of patients  
14:18:22 18 when those patients have been given  
14:18:22 19 pulmonary function tests?  
14:18:22 20 MR. MUEHLBERGER: Object to  
14:18:22 21 the form.  
14:18:22 22 A. I'm aware that someone  
14:18:23 23 published a couple of papers on that  
14:18:25 24 and I'm not very not aware very much of  
14:18:27 25 where it ever went.

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Hannaford

14:18:47 1 Q. We have covered some of these,  
14:18:48 2 but I would like to ask these questions  
14:18:51 3 specifically to try to determine a date  
14:18:57 4 so that your counsel won't object as  
14:19:02 5 being asked and answered, I'm asking  
14:19:09 6 confining them to a period of time.  
14:19:10 7 When did you begin to believe  
14:19:14 8 that nicotine was addictive?  
14:19:17 9 MR. MUEHLBERGER: Object to  
14:19:18 10 the form.  
14:19:18 11 A. I'm thinking, by the way.  
14:19:19 12 BY MR. HOPPER:  
14:19:22 13 Q. Take your time.  
14:19:27 14 A. I guess in the middle-'80s.  
14:19:33 15 Q. When did you -- when did you  
14:19:36 16 begin to believe that smoking caused  
14:19:38 17 lung cancer or other cancers of other  
14:19:47 18 organs?  
14:19:47 19 MR. MUEHLBERGER: Object to  
14:19:47 20 the form.  
14:19:47 21 A. I think I was becoming very  
14:19:50 22 convinced of that in the '70s.  
14:19:52 23 To get more specific, in the  
14:19:55 24 middle-'70s.  
14:19:57 25 Q. But you were aware of it even

14:19:59 1 in the late-'60s, I believed you  
14:20:03 2 testified earlier, when your  
14:20:05 3 grandmother talked to you about  
4 smoking, correct?

5 MR. MUEHLBERGER: Object to  
6 the form.

7 A. She actually talked to me  
8 earlier than that.

9 BY MR. HOPPER:

10 Q. All right.

11 A. Telling me don't drink beer  
12 and don't smoke. This was back in the  
13 1950s.

14 Q. Good thing she didn't say  
15 anything about coffee.

16 A. She wouldn't let me drink  
17 coffee at all. I started drinking  
18 coffee later.

19 Q. When do you believe -- what  
20 period of time did you begin to believe  
21 that smoking caused emphysema or COPD?

22 MR. MUEHLBERGER: Object to  
23 the form.

24 A. I think I was always aware  
25 that when you smoked cigarettes, you

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California  
Department of  
Health  
Care Services

Produced by REPC  
BY MR. HOPPER

14:20:39 1 tended to have coughs. The emphysema  
14:20:49 2 part, I think, again came as a lot of  
14:20:49 3 data came in, in the '80s, early-'80s.  
14:20:54 4 Q. That it caused lung cancer?  
14:21:01 5 A. I'm a firm believer in  
14:21:01 6 research and when someone says  
14:21:03 7 something, unless they have some data  
14:21:06 8 to back it up, and I really thought  
14:21:10 9 about things when papers began to be  
14:21:13 10 published, and not one or two -- a lot  
14:21:15 11 of them.  
14:21:15 12 Q. Lawyers are the same way.  
14:21:18 13 A. Your comment, not mine.  
14:21:21 14 Q. But you do recall there was a  
14:21:24 15 period of time when you began to  
14:21:25 16 believe and understand that smoking  
14:21:28 17 compromised lung function?  
14:21:28 18 MR. MUEHLBERGER: Object to  
14:21:33 19 the form.  
14:21:33 20 A. Yes  
14:21:33 21 BY MR. HOPPER:  
14:21:34 22 Q. What about when you began to  
14:21:42 23 believe smoking caused cardiac disease?  
14:21:42 24 MR. MUEHLBERGER: Object to  
14:21:47 25 the form.

Produced by RJK

14:21:48 1 A. I'm not sure that, you know,  
14:21:49 2 cardiac disease has been something that  
14:21:52 3 I think almost everything you do has  
14:21:54 4 been related to. I don't think of that  
14:21:59 5 as being something that stuck in my  
14:21:59 6 mind with cigarettes. Maybe it did  
14:21:59 7 with hamburgers and fat.  
14:22:05 8 Q. But you're not an expert on  
14:22:09 9 cardiovascular diseases, correct?  
14:22:13 10 A. You are exactly correct.  
14:22:16 11 Q. You do believe that smoking  
14:22:21 12 does cause cardiovascular disease,  
14:22:26 13 correct?  
14:22:26 14 MR. MUEHLBERGER: Object to  
14:22:26 15 the form.  
14:22:26 16 A. Well, you just pointed out I'm  
14:22:27 17 not an expert, so I don't know what  
14:22:27 18 causes it.  
14:22:29 19 Q. I'm asking you as a fact  
14:22:31 20 witness now.  
14:22:31 21 MR. MUEHLBERGER: Objection.  
14:22:33 22 A. I think that smoking can play  
14:22:35 23 a role. I just don't know how big  
14:22:38 24 the role is. And that is kind of  
14:22:42 25 off the top of my head.

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Humphrey Film Laboratory

14:22:44  
14:22:48  
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14:23:31  
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14:24:53  
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14:25:01  
14:25:04  
14:25:08  
14:25:08  
14:25:08  
14:25:08  
14:25:15  
14:25:16  
14:25:22  
14:25:25  
14:25:28  
14:25:28  
14:25:35

1 Q. That is the problem your  
2 client gets into when they are both  
3 fact and expert witness.  
4 VIDEOGRAPHER: This marks the  
5 end of Tape 2. We are going off  
6 the record at 2:23.  
7 (FOLLOWING A BRIEF RECESS, THE  
8 FOLLOWING PROCEEDINGS WERE HAD:)  
9 VIDEOGRAPHER: We are back on  
10 the record at 2:24.  
11 BY MR. HOPPER:  
12 Q. Doctor, is there a dose  
13 response relationship of the number of  
14 cigarettes smoked with respect to  
15 health risk --  
16 MR. MUEHLBERGER: Object to  
17 the form.  
18 Q. -- in your expert opinion?  
19 A. I don't recall having seen one  
20 and that doesn't say there is not, at  
21 least in the stuff I read, which is not  
22 detailed as you probably can guess in  
23 that area.  
24 BY MR. HOPPER:  
25 Q. You keep referring to the

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Reviewed by RRTC  
Edited by RRTC

14:25:38 1 public health community as having  
14:25:40 2 identified all these various compounds.  
14:25:45 3 Were any of these compounds or  
14:25:48 4 carcinogens identified by Philip Morris  
14:25:51 5 before they were identified by the  
14:25:54 6 public health community?  
14:25:56 7 MR. MUEHLBERGER: Object to  
14:25:56 8 the form.  
14:25:56 9 A. Well, I have seen some things.  
14:26:03 10 We have a list that we work from that  
14:26:07 11 is a kind of a compilation of what the  
14:26:11 12 Wynder-Hoffmann group did, the American  
14:26:11 13 Health Foundation, the Surgeon's  
14:26:19 14 General's list, the WHO list, you know,  
14:26:21 15 the International Institute for  
14:26:22 16 Research on Cancer, which is part of  
14:26:26 17 WHO, and also some things that our  
14:26:30 18 toxicology people have added from our  
14:26:35 19 INBIFO testing thing.  
14:26:38 20 So, I can answer I think so  
14:26:40 21 but I have to answer with the  
14:26:43 22 qualification, I don't know exactly, or  
14:26:44 23 whether it was something they saw in  
14:26:47 24 the literature. But we work off a list  
14:26:52 25 that is kind of a compilation. There's

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14:26:57 1 fifty-eight compounds on it.  
14:26:57 2 BY MR. HOPPER:  
14:26:58 3 Q. Could you produce a copy of  
14:27:03 4 that list to us?  
14:27:04 5 MR. MUEHLBERGER: If you make  
14:27:05 6 a request to us, we'll respond.  
14:27:05 7 MR. HOPPER: You're talking  
14:27:05 8 about a formal discovery request?  
14:27:08 9 MR. MUEHLBERGER: Yes, since  
14:27:08 10 I'm not really sure what it is.  
14:27:08 11 A. It's a list that we work --  
14:27:10 12 MR. MUEHLBERGER: There is no  
14:27:11 13 question pending.  
14:27:11 14 BY MR. HOPPER:  
14:27:16 15 Q. If we make that request and  
14:27:16 16 your counsel requires us to do it  
14:27:19 17 through a formal discovery request,  
14:27:22 18 what is it that we should ask for  
14:27:26 19 specifically?  
14:27:26 20 A. The list I work when we do our  
14:27:28 21 plans for research is one that I get  
14:27:30 22 from our Product Integrity Group, which  
14:27:34 23 is run by Dr. Rick Solana, that are the  
14:27:42 24 list of compounds we measure when we do  
14:27:46 25 biological testing. And if I recall,

TAPED FOR RECORDED

14:27:50 1 there are fifty-eight compounds on that  
14:27:53 2 list.

14:27:54 3 MR. HOPPER: I can just make  
14:27:54 4 it easier, Jim, just give him my  
14:28:01 5 card and he can just fax it to me.

14:28:05 6 MR. MUEHLBERGER: Why don't we  
14:28:05 7 deal with it after the deposition.

14:28:06 8 MR. HOPPER: Okay. No problem.

14:28:08 9 BY MR. HOPPER:

14:28:08 10 Q. Doctor, Philip Morris designed  
14:28:12 11 its products that it markets, correct?

14:28:12 12 MR. MUEHLBERGER: I'm sorry.  
14:28:12 13 What was the question? Could you  
14:28:12 14 read that back.

14:28:12 15 (Read as follows: Doctor,  
14:28:12 16 Philip Morris designed its products  
14:28:12 17 that it markets, correct?)

14:28:12 18 MR. MUEHLBERGER: Object to  
14:28:12 19 the form.

14:28:12 20 A. That's correct.

14:28:45 21 BY MR. HOPPER:

14:28:45 22 Q. And you manufacture them?

14:28:45 23 A. In the U.S., we manufacture  
14:28:45 24 them all.

14:28:45 25 Q. And your process, development,

Produced by RJK  
HUMANITY

14:28:45 1 and engineering people have developed  
14:28:45 2 the processes, and the tooling, and the  
14:28:45 3 equipment in such a way to make these  
14:28:49 4 products unique to Philip Morris,  
14:28:52 5 correct?  
14:28:52 6 MR. MUEHLBERGER: Object to  
14:28:58 7 the form.  
14:28:58 8 A. Well, I mean, we get help from  
14:28:59 9 the machinery manufacturers.  
14:28:59 10 Q. And you ought to know more  
14:29:01 11 about your products than anybody else,  
14:29:04 12 or I would expect that you would know  
14:29:07 13 more about your products than anybody  
14:29:10 14 else since you design them and make  
14:29:12 15 them; correct?  
14:29:12 16 MR. MUEHLBERGER: Object to  
14:29:13 17 the form.  
14:29:14 18 A. You know -- I mean, that's  
14:29:15 19 right. And I think we do.  
14:29:22 20 Q. Wouldn't you say, based on  
14:29:22 21 that, that you would have a higher  
14:29:22 22 level of responsibility, or should  
14:29:23 23 reach a higher standard in  
14:29:25 24 communicating to the public and to the  
14:29:27 25 government and to your own customers

Produced by EFC

14:29:31 1 about those products than continuing to  
14:29:33 2 rely or to defer to the public health  
14:29:35 3 community?

14:29:35 4 MR. MUEHLBERGER: Object to  
14:29:36 5 the form.

14:29:36 6 A. I don't disagree with what you  
14:29:39 7 are doing -- or saying. I'm sorry.

8 But at the same time, I think  
9 the public health community has a high  
10 responsibility to protect health and  
11 work in a positive way with us.

14:29:54 12 Q. I don't doubt that and a  
14:29:54 13 deposition is not a place to get into a  
14:29:56 14 debate or an argument, but I tend to  
14:29:57 15 agree with you but on the other hand,  
14:30:00 16 my question is: You have a higher  
14:30:02 17 responsibility as the designer and  
14:30:03 18 manufacturer of your products to  
14:30:08 19 communicate about those products than  
14:30:08 20 anybody else would be, don't you?

14:30:08 21 MR. MUEHLBERGER: Object to  
14:30:11 22 the form.

14:30:12 23 A. I don't disagree with you.

14:30:12 | 24 BY MR. HOPPER:

Q. Why is that you didn't do that

14:30:17 1 when forty years ago you knew what was  
14:30:18 2 in these products and you knew that  
14:30:20 3 hundreds of thousands of people were  
14:30:23 4 dying?

14:30:29 5 MR. MUEHLBERGER: Object to  
14:30:26 6 the form.

14:30:26 7 A. You're asking me, who probably  
14:30:29 8 was playing baseball at Tech when that  
14:30:34 9 happened. But I look at Dr. Wakeham's  
14:30:34 10 list, and I can tell you a lot of the  
14:30:36 11 things he has on there are not correct  
14:30:37 12 today. I mean, no one would call  
14:30:41 13 glucose a carcinogen.

14:30:41 14 BY MR. HOPPER:

Q. But most of them are, correct?

14:30:47 16 A. Many are them are. But that  
14:30:47 17 list includes a lot of things and maybe  
14:30:50 18 half the things that weren't on that  
14:30:50 19 list, and we are finding things out  
14:30:54 20 every day, and yeah, we are buying  
14:30:55 21 equipment to put pamphlets on the back  
14:30:58 22 of Accord and so forth.

14:31:00 23 But you have to remember, we  
14:31:02 24 have to get approval in order to do  
14:31:07 25 that because we cannot advertise

14:31:08 1 anything that may be construed by  
14:31:13 2 anyone that we have a safe cigarette.  
14:31:17 3 So, it's a tricky issue to me than  
14:31:18 4 maybe you're letting on.

14:31:18 5 Q. But my goodness, with that  
14:31:19 6 many people dying per year, don't you  
14:31:21 7 think there is some proof in the  
14:31:24 8 pudding, or excuse my pun, where there  
14:31:28 9 is smoke, there's fire?

14:31:28 10 MR. MUEHLBERGER: Object to  
14:31:31 11 the form.

14:31:32 12 A. Look, I agree. Our  
14:31:32 13 responsibility is to tell people what's  
14:31:33 14 in our products and work like crazy to  
14:31:35 15 take the stuff out. There is no  
14:31:38 16 disagreement between me, or I think you  
14:31:47 17 will find our company, in that regard.

14:31:47 18 Q. But it has taken you forty  
14:31:47 19 years to finally get to that point,  
14:31:47 20 correct?

14:31:47 21 MR. MUEHLBERGER: Object to  
14:31:47 22 the form.

14:31:47 23 A. I can't argue with that but I  
14:31:50 24 will say there are different people  
14:31:53 25 here today than there were forty years

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14:31:56 1 ago. That's the other side of it.  
14:31:56 2 MR. HOPPER: Counsel, if I can  
14:31:56 3 have a minute to confer with my  
14:32:03 4 counsel.  
14:32:03 5 VIDEOGRAPHER: Going off the  
14:32:03 6 record at 2:31 PM.  
14:32:17 7 (FOLLOWING A BRIEF RECESS, THE  
14:37:30 8 FOLLOWING PROCEEDINGS WERE HAD:)  
14:37:33 9 VIDEOGRAPHER: We are back on  
14:37:34 10 the record at 2:37.  
14:37:34 11 BY MR. HOPPER:  
14:37:38 12 Q. Dr. Lilly, I asked you  
14:37:40 13 earlier about the risks and the  
14:37:43 14 benefits of smoking and you answered  
14:37:47 15 that.  
14:37:47 16 One question I didn't ask you,  
14:37:49 17 is do you know any expert in any field  
14:37:52 18 of medicine or science that holds the  
14:37:55 19 opinion that the benefits or the  
14:37:59 20 utility of cigarette smoking outweighs  
14:38:02 21 the danger of cigarette smoking?  
14:38:02 22 MR. MUEHLBERGER: Object to  
14:38:04 23 the form.  
14:38:04 24 A. Do I know?  
14:38:08 25 I guess I don't know anyone.

14:38:09 1 I mean, I know a lot of people in  
14:38:13 2 science, not so many people in the  
14:38:13 3 medical community.

14:38:13 4 Q. When I ask you if you know, I  
14:38:23 5 don't mean necessarily personally.

14:38:23 6 A. I understand.

14:38:23 7 Q. Can you identify anyone?

14:38:23 8 MR. MUEHLBERGER: Object to  
14:38:23 9 the form.

14:38:23 10 A. Off the top of my head, I have  
14:38:26 11 to answer no to your question.

14:38:27 12 BY MR. HOPPER:

14:38:31 13 Q. Or in the field of public  
14:38:31 14 health?

14:38:31 15 MR. MUEHLBERGER: Object to  
14:38:31 16 the form.

14:38:31 17 A. I think we have had some good  
14:38:34 18 statements from the public health  
14:38:36 19 people about Accord.

14:38:39 20 Q. But not with respect to the  
14:38:42 21 benefits or the utility of smoking  
14:38:46 22 outweighing the inherent risks,  
14:38:49 23 specifically?

14:38:49 24 MR. MUEHLBERGER: Object to  
14:38:53 25 the form.

Produced by RTRC

14:38:53 1 A. I would say probably not.  
14:38:53 2 Q. Or from any government agency?  
14:38:56 3 Any expert or anyone in any government  
14:39:00 4 agency, same question.  
14:39:01 5 MR. MUEHLBERGER: Object to  
14:39:02 6 the form.  
14:39:02 7 A. Same answer. I don't know of  
14:39:05 8 anyone.  
14:39:05 9 BY MR. HOPPER:  
14:39:09 10 Q. Again, I'm asking the question  
14:39:12 11 with respect to smoking when a  
14:39:17 12 cigarette is used as intended?  
14:39:19 13 A. I understand, yes.  
14:39:22 14 Q. Has anyone in R & D, or has  
14:39:28 15 anyone at Philip Morris ever tested its  
14:39:31 16 as-marketed products for biological  
14:39:35 17 activity -- its end products?  
14:39:35 18 MR. MUEHLBERGER: Object to  
14:39:38 19 the form.  
14:39:38 20 A. I'm not completely familiar.  
14:39:41 21 I know -- in general I would say no and  
14:39:46 22 the argument I get from toxicologists  
14:39:51 23 is that it's a moving target and I  
14:39:53 24 would agree it's a moving target.  
14:39:56 25 Banded paper, we did do the

Produced by RTRIC

14:39:59 1 biological testing on the product that  
14:40:04 2 was going into market. It hasn't been  
14:40:04 3 done in general.

14:40:06 4 Q. You have all this data with  
14:40:10 5 respect to brands and brand loyalty and  
14:40:12 6 brand switching that could form an  
14:40:16 7 epidemiological basis, correct?

14:40:16 8 MR. MUEHLBERGER: Object to  
14:40:17 9 the form.

14:40:17 10 A. I'm not sure what is required  
14:40:20 11 for an epidemiological basis. We have  
14:40:23 12 a lot of data. I know where you are  
14:40:36 13 going.

14:40:36 14 Q. What do you mean by moving  
14:40:36 15 target?

14:40:36 16 A. I think if you look at our  
14:40:36 17 cigarettes -- Marlboro, if you want to  
14:40:36 18 take an example -- we have had a long  
14:40:39 19 program for removing ingredients out of  
14:40:48 20 Marlboro that's going on today, and  
14:40:48 21 that's why I say it's a moving target.

14:40:55 22 Q. So, has Marlboro as marketed  
14:40:58 23 ever been tested for biological  
14:41:05 24 activity?

14:41:05 25 MR. MUEHLBERGER: Object to

ERIC  
Produced by ERIC

14:41:05 1 form.

14:41:06 2 A. I don't know, unless that was

14:41:08 3 part of the test we did on biological

14:41:12 4 activity for the banded paper.

14:41:17 5 BY MR. HOPPER:

14:41:18 6 Q. Do you know anyone at Philip

14:41:20 7 Morris who believes the benefits or the

14:41:23 8 utility of smoking outweighs the risks?

14:41:23 9 MR. MUEHLBERGER: Object to

14:41:27 10 the form.

14:41:28 11 A. Pretty general question.

14:41:30 12 About the same percentage of people

14:41:34 13 smoke at Philip Morris as the public. I

14:41:37 14 mean, it's certainly going down.

14:41:39 15 Q. Twenty-five percent?

14:41:40 16 A. Yeah.

14:41:41 17 And then there are people --

14:41:45 18 they are occasions when I like to smoke

14:41:48 19 a cigarette, I don't mind telling

14:41:48 20 you -- when I'm drinking some wine or

14:41:51 21 I'm sitting at my desk trying to think

14:41:55 22 about something.

14:41:56 23 Now, is that a benefit?

14:41:58 24 Probably not in the context you are

14:42:01 25 using.

14:42:06 1 Q. Do you know if nicotine  
14:42:08 2 analogues have ever been used in any of  
14:42:13 3 your commercial products?

14:42:14 4 A. I'm not exactly sure but my  
14:42:20 5 sense is no.

14:42:20 6 Q. Do you know why?

14:42:21 7 MR. MUEHLBERGER: Object to  
14:42:21 8 form.

14:42:32 9 A. I know they would require FDA  
14:42:32 10 approval, which is a pretty long  
14:42:32 11 process.

14:42:32 12 BY MR. HOPPER:

14:42:32 13 Q. Would that then require your  
14:42:34 14 products to become regulated by the FDA  
14:42:38 15 as a drug?

14:42:39 16 MR. MUEHLBERGER: Object to  
14:42:40 17 the form.

14:42:40 18 A. I'm not sure if adding a  
14:42:42 19 compound would or not, but I know you  
14:42:44 20 would have to go through the approval  
14:42:46 21 steps.

14:42:39 22 Q. The PMA, premarket approval  
14:42:40 23 process?

14:42:49 24 A. Yes.

14:42:50 25 MR. HOPPER: I don't have any

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HUMPHREY

14:42:51      1      further questions, Counsel.  
14:43:02      2      MR. PENFIELD: We do have one  
14:43:03      3      thing, the reliance documents we  
14:43:09      4      want to make part of the record.  
14:43:09      5      /  
14:43:09      6      MR. MUEHLBERGER: Are we off  
14:43:09      7      the record?  
14:43:09      8      MR. HOPPER: I don't think so.  
14:43:09      9      MR. MUEHLBERGER: I have to  
14:43:10      10     make a phone call.  
14:43:10      11     /  
14:43:12      12     VIDEOGRAPHER: We are going  
14:43:13      13     off the record at 2:42.  
14:43:13      14     (Off record.)  
14:47:04      15     /  
14:47:04      16     MR. PENFIELD: Just for the  
14:47:07      17     record, Counsel is inquiring of the  
14:47:10      18     compilation of the reliance  
14:47:13      19     documents that are supportive of  
14:47:17      20     the listing that has been marked as  
14:47:18      21     Exhibit Four, and he is checking to  
14:47:21      22     see of the location of some of the  
14:47:23      23     documents, which, hopefully, we'll  
14:47:23      24     have all the documents submitted as  
14:47:27      25     part of Exhibit Four.

Produced by RRTC  
in

14:47:27 1 If not, then we reserve the  
14:47:27 2 right to reopen to question about  
14:47:30 3 those documents.  
14:47:30 4  
14:47:59 5 (Whereupon, the proceedings  
6 were concluded and the witness was  
7 excused.)  
8 (Reliance documents were  
9 given to the Court Reporter, which  
10 are separately bound from the  
11 transcript.)  
12  
13  
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## 1 C E R T I F I C A T E

2 I, BETTY C. GODSO, CERTIFIED SHORTHAND  
3 REPORTER, #87189, REALTIME REPORTER,  
4 REGISTERED PROFESSIONAL REPORTER  
5 #005405, AND DEPUTY CLERK OF COURT IN  
6 AND FOR THE STATE OF LOUISIANA DO  
7 HEREBY CERTIFY; THAT THE WITNESS WAS  
8 SWORN TO TELL THE TRUTH, THE WHOLE  
9 TRUTH, AND NOTHING BUT THE TRUTH IN  
10 SAID CAUSE; THAT THE FOREGOING  
11 TESTIMONY WAS TAKEN BY ME IN STENOTYPE  
12 AND THEREAFTER REDUCED TO TYPEWRITING  
13 BY ME OR UNDER MY SUPERVISION; AND THE  
14 FOREGOING PAGES CONTAIN A FULL AND  
15 CORRECT TRANSCRIPTION OF ALL THE  
16 TESTIMONY OF SAID WITNESS TO THE BEST  
17 OF MY ABILITY AND UNDERSTANDING; THAT I  
18 AM NOT OF KIN OR IN ANYWISE ASSOCIATED  
19 WITH ANY OF THE PARTIES TO SAID CAUSE  
20 OF ACTION, OR THEIR COUNSEL, AND THAT I  
21 AM NOT INTERESTED IN THE EVENT THEREOF;  
22 THAT THE ORIGINAL WAS PROVIDED TO  
23 TAKING COUNSEL FOR THEIR CUSTODY AND  
24 CONTROL.

25 BETTY C. GODSO, CSR # 87189



Produced by EKTC

Accu-Tech Court Reporters  
P.O. Box 45212, #446  
Baton Rouge, LA 70895  
225-665-1270 Fax 225-665-9059  
Email accutech@eate1.net

October 27, 2000

James P. Muehlberger, Esq.  
Shook, Hardy & Bacon  
One Kansas Place  
1200 Main Street  
Kansas City, Missouri 64105-2118

RE: Scott v. American Tobacco, et al

Dear Mr. Muehlberger:

Reading and Signing was not waived by Mr. Clifton Lilly.

Please have him read the transcript, make any changes he feels necessary, and return the Witness Certificate along with the Errata Sheet(s).

Please keep a copy for your transcript, and please remind the deponent not to write on the transcript itself, but to make any changes on the Errata Sheet.

Upon receipt, we will forward to other counsel in this matter.

Very truly yours,



Betty C. Godso, CCR, RPR

/bcg

Production by RPR

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INSTRUCTION SHEET FOR READ AND SIGN

THE ENCLOSED ERRATA SHEET IS FOR YOUR USE IN NOTING ANY INSTANCES YOU FEEL THE COURT REPORTER MISHEARD, MISUNDERSTOOD OR MISSPELLED WHAT YOU SAID IN YOUR DEPOSITION. IF YOU HAVE ANY QUESTIONS REGARDING A CHANGE YOU WISH TO MAKE, PLEASE CONSULT WITH YOUR ATTORNEY.

YOU SHOULD NOT BE CONCERNED WITH CHANGING MINOR SPELLINGS AND/OR PUNCTUATION UNLESS YOU FEEL IT AFFECTS THE MEANING OF YOUR TESTIMONY. IF YOU NEED TO CORRECT A SPELLING, IT IS ONLY NECESSARY TO DO IT ONCE, NOT EVERY TIME IT OCCURS IN THE TRANSCRIPT. YOU SHOULD NOT MAKE CORRECTIONS TO THE SPOKEN WORD OF ANYONE BUT YOURSELF. YOU SHOULD NOT EXPECT A TYPED, VERBATIM TRANSCRIPT TO READ SMOOTHLY AS A CAREFULLY WORDED LETTER, REPORT, OR MANUSCRIPT.

MOST RULES OF PROCEDURE REQUIRE THE SIGNED WITNESS' CERTIFICATE TO BE RETURNED WITHIN 30 DAYS. CHECK WITH YOUR ATTORNEY, OR THE ATTORNEY WHO REQUESTED YOU READ AND SIGN [REDACTED] YOU HAVE QUESTIONS.

IF THERE ARE NO CHANGES, PLEASE RETURN ONLY THE SIGNED WITNESS' CERTIFICATE.

## WITNESS' CERTIFICATE

I HAVE READ OR HAVE HAD THE FOREGOING TESTIMONY  
READ TO ME AND HEREBY CERTIFY THAT IT IS A TRUE AND  
CORRECT TRANSCRIPTION OF MY TESTIMONY WITH THE EXCEPTION  
OF ANY ATTACHED CORRECTIONS OR CHANGES.

WITNESS' SIGNATURE DATE

A. Clifton Lilly

PLEASE INDICATE

- ( ) NO CORRECTIONS  
( ) CORRECTIONS, ERRATA SHEET ENCLOSED

Return to attorney or: Accu-Tech Reporters;

P.O. Box 45212; Baton Rouge, LA 70895

produced by JERIC

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**E R R A T A      S H E E T**

Please return the signed Witness Certificate along with any changes either to the attorney who has requested that you read and sign or to: Accu-Tech Court Reporters; P.O. Box 45212, #446; Baton Rouge, LA 70895.

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HUMANITRON



EXHIBIT

25325-03

CIVIL DISTRICT COURT FOR THE PARISH OF ORLEANS  
STATE OF LOUISIANA

NO. 96-8461

DIVISION "K"

DOCKET NO.

Lilly Pl. 1  
10-17-00

GLORIA SCOTT and DEANIA M. JACKSON,  
on behalf of themselves and all others similarly situated

Versus

THE AMERICAN TOBACCO COMPANY, INC., et al

FILED: \_\_\_\_\_

DEPUTY CLERK

NOTICE OF VIDEO DEPOSITION OF A. CLIFFORD LILLY  
FOR DISCOVERY PURPOSES AND/OR FOR USE AT TRIAL

To: A. Clifford Lilly  
Through his attorney of record:  
Scott E. Delacroix, Esq.  
Adams & Reese  
One Shell Square, Suite 4500  
New Orleans, Louisiana 70139

All Defendants  
Through Liaison Counsel:  
Scott E. Delacroix, Esq.  
Adams & Reese  
One Shell Square, Suite 4500  
New Orleans, Louisiana 70139

Phillip A. Wittmann, Esq.  
Stone Pigman  
546 Carondelet Street  
New Orleans, Louisiana 70130

Definitions and Instructions

- A. Document - As used herein, the term "document" shall be construed broadly and expansively to include any medium upon which information is recorded, including, but not limited to, writings, records, letters, correspondence, minutes, memoranda, notes, e-mails, Internet and World Wide Web information, photocopies, facsimiles, transcripts, graphs, contracts, agreements, applications, forms, photographs, videotapes, audiotapes, microfilm, charts, studies, tables, calculations, analyses, summaries, compilations, advertisements, fliers, mailings, brochures, binders, notebooks, manuals, notices, acknowledgments, forms, and any draft of the foregoing, which is, or has been, at any time, in the control, custody or possession of the deponent, Philip Morris, Inc., Philip Morris USA, Philip Morris Worldwide Scientific Affairs, and/or parties acting on behalf of Philip Morris, Inc., Philip Morris USA, and/or Philip Morris Worldwide Scientific Affairs, including, but not limited to, the deponent, and/or other employees, officers, managers, directors, parent corporations, predecessors-in-interest, subsidiaries, associates, experts, consultants, agents, public relations advisors, advertising agents or consultants or advisors, investigators, researchers, scientists, secretaries, assistants, or attorneys.
- B. Philip Morris - Shall refer to Philip Morris, Inc., Philip Morris USA, Philip Morris Worldwide Scientific Affairs, and/or all parties acting on behalf of Philip Morris, Inc., Philip Morris USA, and/or Philip Morris Worldwide Scientific Affairs, including, but not limited

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to, employees, officers, managers, directors, parent corporations, predecessors-in-interest, subsidiaries, associates, experts, consultants, agents, public relations advisors, advertising agents or consultants or advisors, investigators, researchers, scientists, secretaries, assistants, or attorneys.

- C. **Defendant** - Shall refer to each Defendant, and all parties acting on behalf of that Defendant, including, but not limited to, employees, officers, managers, directors, parent corporations, predecessors-in-interest, subsidiaries, associates, experts, consultants, agents, public relations advisors, advertising agents or consultants or advisors, investigators, researchers, scientists, secretaries, assistants, or attorneys.

D. **Privilege** - If a privilege is claimed over any document, (as "document" is defined above), please provide: (a) the identity of the author of the document, (b) the identity of the recipient of the document, (c) the date that the document was prepared, (d) a brief description of the document, and (e) the basis upon which the privilege is claimed, including the statute, rule or decision upon which the claim of privilege is based.

E. **Relates** - Shall be interpreted broadly and expansively, to include relating, referring, pertaining, evidencing, supporting, describing, mentioning, including, contradicting, or compromising.

F. The terms "and" and "or" and "and/or" shall be construed broadly and expansively as "and/or", and shall not be construed to limit the documents or information sought in any manner.

G. **Depositions** to be used for both discovery and trial purposes. These depositions are noticed for all purposes, including trial on the merits, and are to be video and audio depositions.

H. **Video and audio depositions.** These depositions are noticed for all purposes, including trial on the merits, and are to be video, audio, and transcribed depositions.

I. **Disputes.** All disputes and objections shall be brought to the Special Master or District Court Judge in Civil District Court, New Orleans, Louisiana, for resolution and ruling, and not to Judges in other venues or jurisdictions.

J. **Conformity with Case Management Order.** The depositions herein noticed shall be in conformity with the Court's Case Management Order. See Case Management Order No. 2, pages 6-9, Paragraph 16(c),(d). (attached as Exhibit "A").

**DEPOSITION NOTICE**

PLEASE TAKE NOTICE that, commencing on Tuesday, October 17th, 2000, at 9:00 a.m. (EST), or as soon thereafter as practically possible, and continuing until concluded from day to day, at The Jefferson Hotel, located at 101 Franklin Street, in Richmond, Virginia, the Plaintiff, Gloria Scott, Deana Jackson, and a certified class of similarly situated individuals, will take the deposition upon oral examination of A. Clifford Lilly, who has been identified in defendants' Preliminary Witness List and Philip Morris Incorporated's Expert Witness List as an expert expected to testify about cigarette design, cigarette modification, and other issues, pursuant to the Louisiana Code of Civil Procedure and Scott CMO2, before

an officer duly authorized to administer oaths, and by videotape, for all purposes, including perpetuation and use at trial. You are invited to attend and to participate as you deem appropriate.

**DOCUMENT REQUESTS**

**PLEASE TAKE FURTHER NOTICE** that deponent is hereby requested, pursuant to the Louisiana Code of Civil Procedure, the recommendations of the Special Master, and *Scott CMO2*, to produce and to permit the Plaintiffs to inspect and photocopy all documents set forth below:

1. A copy of the deponent's most current *curriculum vitae*;
2. Any and all documents relied upon to form the deponent's opinions in the case of *Gloria Scott, et al vs. The American Tobacco Company, et al.* and/or that deponent intends to rely upon, including, but not limited to, any and all documents identified or referenced in the deponent's expert report, and further including, but not limited to, any and all industry documents, medical records, articles, books, book chapters, or other medical or scientific publications or data, (whether published or unpublished);
3. Any and all documents referenced or identified in Data and Other Information Considered (attached hereto as Exhibit "B") and/or Citations of Authority Upon Which Expert Relies (attached hereto as Exhibit "C").
4. Any and all deposition and/or trial testimony that deponent has given in any lawsuit, including written transcripts and/or videotapes, and any and all testimony that deponent has given before or submitted to any legislative or regulatory body, committee, sub-committee, or agency, including written transcripts and/or videotapes and/or affidavits, relating to smoking and health issues, personal injuries arising from tobacco use, cigarette advertising or marketing, cigarette labeling, lung cancer, throat cancer, bladder cancer, chronic obstructive pulmonary disease, heart disease, the FTC method, compensation, nicotine manipulation, addiction, medical monitoring, and/or smoking cessation, including, but not limited to, the testimony identified in Philip Morris' Answer to Interrogatory No. 1, (i.e. *Barnes v. American Tobacco Company*, No. 96CV-3903, USDC E.D.Pa., Sept. 30, 1997, *Engle v. R.J. Reynolds*, No. 94-08273 CA (20) Dade County Circuit Court, May 7, 1998, Feb. 1, 1999, and April 16, 1999, *Frosina v. Philip Morris*, No. 96110950, Supreme Court of New York, Sept. 3, 1997, *Philip Morris v. ABC*, No. 76OCL94X00816-00, City of Richmond Circuit Court, June 30, 1995, and Aug. 8, 1995, *Minnesota v. Philip Morris*, No. C1-94-8565, Ramsey County District Court, April 21, 1998, *State of Oklahoma v. R.J. Reynolds*, No. CJ-96-1499-L, Cleveland County District Court, Oct. 14, 1998, and, *Washington v. American Tobacco Company*, No. 96-2-1-5056-8SEA, King County Superior Court, Oct. 30, 1997), which has not yet been produced to *Scott* plaintiff's counsel.
5. Any and all complete original file(s) pertaining to *Scott v. American Tobacco, et al.*, including, but not limited to, any and all expert billing records, consultation agreements, and/or employment agreements of any nature between deponent and Philip Morris.
6. Any and all documents that are not reflected in deponent's *curriculum vitae* or expert report, but which are related to or arise from any research or other scientific endeavor conducted by the deponent relating to smoking and health issues, smoking cessation, medical monitoring, routine medical tests or screening, cigarette advertising or marketing, the FTC method, compensation, nicotine manipulation, and cigarette or tobacco research of any kind.

- PROHIBITED EVIDENCE  
PROHIBITED BY RULE**
7. Any and all documents provided to deponent by counsel for Philip Morris and/or counsel for any other defendant and/or any other expert hired by Philip Morris or any other defendant, in *Scott*, and/or in any other litigation relating to smoking and health issues, personal injuries arising from tobacco use, cigarette advertising or marketing, medical monitoring, and/or smoking cessation.
  8. Any and all documents pertaining to Plaintiffs, Philip Morris, other defendants, and/or any other matter which is relevant to *Scott*, obtained from any source.
  9. Any and all notes pertaining to Ms. Scott or Ms. Jackson.
  10. Any and all exhibits, compilations, summaries, notes, memoranda, audiotapes, videotapes, and/or PowerPoint or other computer and/or slide presentations, prepared by or at the request of deponent relating or in any way pertaining to *Scott*.
  11. Any and all correspondence, including electronic mail, between deponent and counsel for Philip Morris and/or any other expert hired by any defendant in the *Scott* litigation.
  12. Copies of any and all public statements, including those made for the media or legislative or regulatory purposes, relating to the etiology of chronic diseases, smoking cessation, routine tests or screening, medical monitoring, cigarette advertising or marketing, cigarette design, and/or addiction.
  13. Copies of any and all lecture notes, outlines, PowerPoint or other computer and/or slide presentations, and/or course materials, for any and all lectures and/or seminars prepared or presented in any teaching or educational capacity, relating to the etiology of chronic diseases, smoking cessation, routine tests or screening, medical monitoring, cigarette advertising or marketing, cigarette design, and/or addiction.
  14. Any and all documents, including, but not limited to, copies of correspondence exchanged with persons or organizations, relating to the etiology of chronic diseases, smoking cessation, routine tests or screening, medical monitoring, cigarette advertising or marketing, cigarette design, and/or addiction.
  15. Any and all summaries, evaluations, memoranda or reports prepared by deponent that relate to his opinions and/or anticipated testimony in *Scott*.
  16. Any and all articles, books, or book chapters written by or contributed to by deponent that are in press or otherwise not publicly available.
  17. Any documents, including electronic communications and/or notes, pertaining to the attachments in deponent's expert report.
  18. Any and all documents relating to projects, research, budgets, and/or cost studies, relating to medical monitoring and/or smoking cessation devices, protocols, treatments, and/or programs.
  19. Any and all documents relating to animal studies.
  20. Any and all documents evidencing or otherwise relating to the presence or addition of ammonia, ammonia compounds, and/or acetohalide, in or to Philip Morris cigarettes.
  21. Any and all documents evidencing or otherwise relating to the addition of nicotine compounds, nicotine analogues, nicotine blends, and/or nicotine, to Philip Morris

NOTICE OF DEPOSITION  
Philip Morris Inc.

cigarettes.

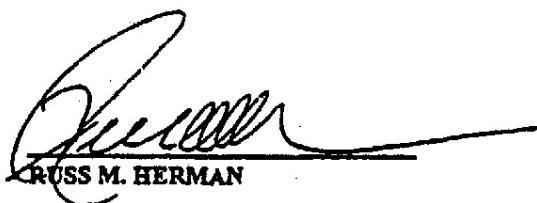
22. Any and all documents relating to the development, research, marketing, and/or promotion of any proposed or actual "safe", "safer", "healthy", "healthier", and/or "demicotinized" cigarettes or other nicotine products.
23. Any and all documents relating to cigarette design and modification issues and/or "other issues" referenced at page 3, paragraph 32, of Defendants' Witness List.

Respectfully submitted,

  
RUSS M. HERMAN, Bar No. 6819  
STEVE HERMAN, Bar No. 23129  
Herman Herman Katz & Cotlar, LLP  
820 O'Keefe Avenue  
New Orleans, Louisiana 70113  
Telephone: (504) 581-4892  
Fax No. (504) 561-6024

**CERTIFICATE OF SERVICE**

I hereby certify that the above and foregoing Notice has been served upon deponent, who is a current Philip Morris employee and/or has been listed as a fact and/or expert witness by Philip Morris, through defendant's counsel of record, Scott Delacroix, by hand, and upon Defense Liaison Counsel and the Special Master, by placing a copy of same in the U.S. Mail, properly addressed and postage pre-paid, this 12<sup>th</sup> day of September, 2000.

  
RUSS M. HERMAN

EXHIBIT

Lilly 470.2  
10-17-00

CIVIL DISTRICT COURT FOR THE PARISH OF ORLEANS  
STATE OF LOUISIANA

NO. 96-8461

DIVISION "K"

GLORIA SCOTT, ET AL

VERSUS

THE AMERICAN TOBACCO COMPANY, INC., ET AL

CASE MANAGEMENT ORDER NO. 2 ("CMO 2")

This order governs these proceedings and remains in effect up to the signing of a superceding Case Management Order or the Pre-Trial Order by this Court. This order is final and no modifications to this order are permitted without written motion to the Court, and upon a showing of good cause.

1. Provisions Continued from Case Management Order No. 1

Paragraphs 17, 20, 21, 23, 24, 25, 26, 27, 28 and 30 of Case Management Order No. 1 shall remain in force and effect.

2. Dates

Any reference here to "days" shall refer to calendar days.

3. Stay of Discovery

The stay of discovery imposed in Paragraph 15 of Case Management Order No. 1 is hereby lifted. All discovery shall be conducted in strict accord with the provisions of this Order.

4. Rules Governing Proceedings

Except as otherwise provided in this Court's prior orders, in this order, or by further order of this court, the Louisiana Code of Civil Procedure and the Uniform Rules of the Civil District Court for the Parish of Orleans shall govern all further proceedings herein.

5. Transcripts

All hearings and status conferences in this matter, including those before the Special Master, shall be transcribed in the absence of agreement to the contrary by all parties. The cost of such transcription shall be divided equally between plaintiffs and

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defendants.

6. Substantive Issues of Law

Nothing set forth in this Case Management Order shall be deemed to effect any substantive right, claim, or defense of any party to this matter or to constitute any ruling or order on any question of law.

7. Admission of Counsel

Any non-Louisiana attorney who wishes to appear *Pro Hac Vice* in this litigation and who has not previously moved for and obtained an order of admission can file and serve a Notice of Appearance *Pro Hac Vice*. The Notice shall indicate the Bars of all the States in which the attorney is a member in good standing. Upon filing and service of the Notice, the attorney shall be deemed admitted *Pro Hac Vice*. No further court order shall be required for such admission. Any non-Louisiana attorneys so admitted shall be subject to and governed by the Louisiana Rules of Professional Conduct.

8. Amendment of Pleadings

All amendments to pleadings related to the Phase I, II and III trials shall be filed on or before August 1, 2000. Defendants shall have thirty (30) days after service of such pleadings to file responsive pleadings.

9. Pending Exceptions and Motions

There currently are pending the following exceptions and motions:

- a. Declinatory Exception of Lack of Personal Jurisdiction of UST Inc.
- b. Declinatory Exception of Lack of Personal Jurisdiction of The Tobacco Institute, Inc.
- c. Exception of Lack of Personal Jurisdiction of BATUS Holdings, Inc. and BATUS, Inc.
- d. Declinatory Exception of Lack of Personal Jurisdiction of American Brands, Inc.
- e. Declinatory Exception of Lack of Personal Jurisdiction of RJR Nabisco, Inc.
- f. Exception of Lack of Personal Jurisdiction of Loews Corporation
  
- g. Exceptions incorporated in the Answer filed by R.J. Reynolds Tobacco

PRODUCED BY R.R.T.C.

**Company**

- h. Exceptions Incorporated in the answer filed by Phillip Morris Companies, Inc.
- i. Exceptions incorporated in the answer filed by Brown and Williamson Tobacco Corporation, individually and as successor by merger to the American Tobacco Company
- j. Motion of Brown and Williamson Tobacco Corporation, individually, and as successor by merger to The American Tobacco Company to strike Exhibit S.

As set forth in Paragraph 21 of Case Management Order No. 1, the failure of any defendant to fix such declinatory and/or dilatory exceptions or other motions for hearing, and the participation by such defendants in other proceedings in this case, shall not constitute the waiver of any defendants' exceptions and shall be without prejudice to, and with full reservation of, all rights and remedies of such defendants relating to their jurisdictional and other exceptions. Notwithstanding the foregoing, any defendant may fix its exceptions and/or motions for hearing on any of the hearing dates identified in any Order of this Court, or subsequently identified by further order of this Court, as a hearing date for this matter, conditioned upon compliance with the filing and notice requirements set forth in this Case Management Order.

**10. Filing of Motions and/or Fixing Pending Matters for Hearing**

**Scheduling Pending Matters for Hearing**

Any defendant may fix its exceptions and/or motions for hearing on any of the dates identified by this Court as a hearing date in this matter. In order to fix a pending exception and/or motion for hearing, such defendant must notify plaintiffs of its intent to bring forth the exceptions and/or motion for hearing at least twenty-one (21) days prior to the scheduled hearing date. Any opposition to the exception and/or motion must be filed with the Court at least seven (7) days in advance of the hearing date. Any reply memorandum must be limited to the matters raised in the opposition and must be filed with the Court at least two (2) days in advance of the hearing date. No further briefing is

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permitted.

**b. Filing and Scheduling New Matters for Hearing**

Except as otherwise set forth in this Order or a Pre-Trial Order, any party may file a motion and schedule it for hearing on one of the dates identified by this Court as a hearing date for this case, or subsequently identified by further order of this Court as a date for this matter. Except as otherwise set forth in this Case Management Order, such motion must be filed and scheduled for hearing at least twenty-one (21) days prior to the scheduled hearing date. Any opposition to the motion must be filed with the Court at least seven (7) days in advance of the hearing date. Any reply memorandum must be limited to matters raised in the opposition and must be filed with the Court at least two (2) days in advance of the hearing date. No further briefing is permitted excepted by leave of court for good cause shown.

All motions and memorandum must be served upon the Special Master at the time of service on the adverse party.

**c. Dispositive Motions**

All dispositive motions in this matter shall be filed in accordance with the deadlines set forth in this CMO. All such motions must be served on the Special Master at the time of service on the adverse parties.

**11. Discovery Disputes**

All discovery disputes are hereby referred to the Special Master for expedited hearing and resolution.

**12. Discovery Requests and Responses**

Pursuant to Louisiana Code of Civil Procedure Article 1474 and Local Rule 9, Section 3, discovery requests and responses shall not be filed with the Court except that they may be appended to a motion or opposition to which they are relevant or as otherwise authorized by the Louisiana Code of Civil Procedure.

**13. Service of Discovery on the Special Master**

Copies of all written discovery material shall be served on the Special Master.

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#### 14. Service

A courtesy copy of all pleadings, motions, briefs, or other documents filed or otherwise presented to the Court or the Special Master by plaintiffs shall be delivered by hand or by fax to defendants' liaison counsel and to local counsel for Brown & Williamson Tobacco Corporation, Lorillard Tobacco Company, The Tobacco Institute and United States Tobacco Company no later than 4:00 p.m. on the earliest date the pleading, motion, brief or other document is filed and presented. If the pleading, motion, brief or other document is to be submitted to the Court for action on the same day as filing or presentation, it must be delivered by hand or by fax before presentation to the Court.

Five courtesy copies of all pleadings, motions, briefs or other documents filed or otherwise presented to the Court or the Special Master by any defendant shall be delivered by hand or by fax to plaintiffs' liaison counsel no later than 4:00 p.m. on the earliest day the pleading, motion, brief or other document has been filed or presented. If the pleading, motion, brief or other document is to be submitted to the Court for action on the same day as filing for presentation, it must be delivered by hand or by fax, before presentation to the Court.

#### 15. Class Notice and Notification Plan

Notice to the Class shall occur in accordance with the orders of this Court.

#### 16. Phase I, II and III Trial Discovery

The stay of discovery is hereby lifted. Accordingly, discovery relating to the named plaintiffs' individual claims, class-wide claims and all the issues to be adjudicated in the Phase I, II and III trials, as set forth in this Court's Trial Order 1, including records collection, written discovery and depositions, shall be conducted according to the following schedule, which may be extended or modified only for good cause shown, upon contradictory hearing.

##### a.) Records Collection

If not previously provided, within twenty-one (21) days of entry of the CMO, named plaintiffs and class representatives shall execute and provide to Defendants' Liaison Counsel authorizations for the release of medical, prescription, psychiatric, employment, insurance, union and educational records and a verified list of all of their respective

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treating physicians and of all medical facilities where they have received treatment, and shall cooperate so as to enable defendant to obtain such records expeditiously. One copy of all such medical, prescription, psychiatric, employment, insurance, union and educational records obtained by defendant shall be provided to Plaintiffs' Liaison Counsel within ten (10) days of receipt of such records by defendant.

b.) Written Discovery

- I. All written discovery (Interrogatories, Requests for Production and Requests for Admission) shall be served on the opposing party on any issue pertaining to the Phase I, II and III trials no later than forty-five (45) days from the date of entry of CMO2.
- II. Within thirty (30) days after the service of written discovery, all parties are to serve any objections and responses to written discovery. All answers shall be verified in accordance with the provisions of the Louisiana Code of Civil Procedure.
- III. Any motions relating to written discovery shall be filed in accordance with the provisions of CMO2 and shall be scheduled for hearing before the Special Master.

c.) Depositions of Fact Witnesses

- I. Depositions of fact witnesses, including class representatives, may be noticed immediately after the entry of CMO2. The parties shall confer with each other, third-party defendants and the Special Master (when feasible and appropriate) and attempt to agree on the scheduling of depositions as to time and place. Any party noticing a deposition shall give at least ten (10) days notice of the taking of the deposition unless a shorter period of time is agreed to by the parties or ordered by the Court or the Special Master for good cause shown.
- II. All depositions may be videotaped. Any party intending to videotape a deposition shall so state in a Notice of Deposition.
- III. Attendance and Examination: Unless otherwise agreed to by the parties or ordered by the Court or the Special Master, depositions

may be attended only by the parties, the parties' experts and consultants, the deponents, the deponents' attorneys, attorneys representing any of the parties in this action, in-house counsel for the parties, the employees of such counsel, and court reporters. Plaintiffs and defendants, collectively, shall designate a lead counsel in conducting the examination of the deponent, but counsel for other parties may be permitted to conduct examination on non-duplicative matters.

iv. *Conduct at Depositions:* Unless otherwise agreed by the parties, and noted on the record, the following stipulations shall apply to all depositions in this action:

- 1.) Unless otherwise specified by any defendant, an objection by a single defendant shall be deemed an objection by all defendants. However, unless otherwise specified, an instruction not to answer by one defendant should not be deemed an instruction not to answer by all defendants.
- 2.) All objections are reserved until trial or other use of the deposition, except those objections regarding the form of the question or the existence of a privilege.
- 3.) Counsel shall refrain from engaging in colloquy during depositions. The phrase "objection as to form" or similar language shall be sufficient to preserve all objections as to form until the deposition is sought to be used. If requested, the objecting party shall provide a sufficient explanation for the objection to allow the deposing party to rephrase the question.
- 4.) The counsel shall not direct or request that a witness refuse to answer a question, unless that counsel has objected to the question on the ground that the

question seeks privileged information, information that the Court has ordered may not be discovered, or a deponent seeks to present a motion to the Court for termination of the deposition on the grounds that it is being conducted in bad faith or in such a manner as unreasonably to annoy, embarrass, or press the party or the deponent. When a privilege is claimed, the witness shall nevertheless answer questions relevant to the existence, extent or waiver of the privilege, such as the date of a communication, who made the statement, to whom and in whose presence the statement was made, other persons to whom the contents of the statement was made, any other person to whom the contents of the statement has been disclosed, and the general subject matter of the communication.

- 5.) Counsel shall not make objections or statements which might suggest an answer to a witness.

d.) Use of Videotape Depositions

Parties should arrange to videotape the depositions of witnesses not expected to testify live at trial. Deposition designations presented in lieu of live testimony should be presented via edited video deposition presentations incorporating the Judge's rulings on objections, the offering party's designated testimony and the opposing parties counter-designations. In the event a video deposition is not available, parties may read selected deposition designations into the record.

17. Rulings; Immediate Presentation

Disputes arising during depositions that cannot be resolved by agreement and that, if not immediately resolved, will significantly disrupt the discovery schedule or require rescheduling of the deposition, shall be presented by telephone or in person to the Special Master. In the event the Special Master is not available, the deposition shall

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continue with the issue of contention reserved until the Special Master is available. The presentation of the issue and the Special Master's ruling shall be recorded as part of the deposition.

**18. Use of Castano Depositions**

All depositions (including depositions of class representatives and fact and expert witnesses) and the entire discovery and testimonial record taken or developed in Castano, prior to the certification of the class on February 17, 1995, may be used in this action for any purpose as if the depositions had been taken and the record had been generated in this case.

**19. Requirement to Confer**

Counsel must confer at least seven (7) days prior to the filing of any motion to compel or other motion related to discovery. No party shall file a motion to compel or other motion relating to discovery unless certification is made in the record by counsel for the moving party that the parties conferred and a good faith attempt was made to resolve disputes arising from the responses to discovery.

**20. Document Identification**

Counsel shall develop and use a system for identifying, by unique number or symbol, each document produced or referred to during the course of this litigation.

**21. Document Production**

Within sixty (60) days after the entry of CMO2, the plaintiffs shall furnish the defendants with a preliminary list of documents which they believe to be relevant to the issues of the Phase I, II and III trials and a preliminary identification of documents they may introduce at each of the Phase trials, identifying the Phase trial at which the document may be offered. This list of documents shall contain the following categories of information (if said information is available):

- a. The defendant the document relates to;
- b. Any identifying or bates numbers contained on said document;
- c. The date of the document;
- d. The author of the document;
- e. The recipient of any document;

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- f. A brief reference description of the contents of the document;
- g. An identification of the source of the document;
- h. Any other identifying numbers affixed to said document;

Within thirty (30) days after the receipt thereof, the defendants shall specify which documents defendants are unable to identify from plaintiffs' list and request copies of said documents from the plaintiffs. Plaintiffs shall furnish copies of such documents to the defendants on or before ten (10) days after receipt of such request.

Within sixty (60) days after the entry of CMO2, the defendants shall also furnish the plaintiffs with a preliminary list of documents which they believe to be relevant to the issues of the Phase I, II and III trials and a preliminary identification of documents they may introduce at each of the Phase trials identifying the Phase trial at which the document may be offered. This list of documents shall contain the following categories of information (if such information is available):

- a. The defendant the document relates to;
- b. Any identifying or Bates numbers contained on said document;
- c. The date of the document;
- d. The author of the document;
- e. The recipient of any document;
- f. A brief reference description of the contents of the document;
- g. An identification of the source of the document;
- h. Any other identifying numbers affixed to said document.

Within thirty (30) days after receipt of the defendants' list of documents, the plaintiffs shall specify which documents plaintiffs are unable to identify from defendants' list and request copies of said documents from defendants. Defendants shall furnish copies of such documents to the plaintiffs on or before ten (10) days after receipt of such request.

All parties shall make a continuing good faith effort to identify additional documents which may be used at trial and to supplement their listing of documents on a timely basis. All documents shown on any supplemental listings shall be subject to the time limitations for identification and assertion of privilege set forth hereinabove.

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## 22. Privilege Logs

Within thirty (30) days after production of the lists of documents, the parties shall identify all documents which the parties assert are protected by any privilege and shall submit a privilege log to the Special Master and serve notice to the parties of any claim of privilege in the following manner:

- a. If any documents are withheld from production on the grounds of privilege or work product, the withholding party shall serve on the party requesting production, as part of the objection to production, a privilege log identifying each document withheld and specifying for each document its nature or type, its identification number, its date, its author(s), its addressee(s), the recipient(s) of copies, its subject matter and the basis for the assertion of privilege or work product.
- b. In lieu of preparing the privilege log required by subsection (a) above, the parties may, as to any set of documents which are both numerous and raise common privilege or work product issues, identify the documents for which a claim of privilege or work product is being made in a generic matter by category of document rather than on a document by document basis, provided that the description of each category is sufficient to permit the claim of privilege or work product to be evaluated by the opposing party, the Special Master and the Court.
- c. The privilege log shall also be submitted as part of any responses or objections to interrogatories or document requests in which a privilege is asserted.

All motions arising from disputes related to the discovery of documents and privilege issues are hereby referred to the Special Master for expedited hearing and prompt recommendations to the Court for action.

## 23. Completion of Merits Discovery of Fact Witnesses

All merits discovery of fact witnesses pertaining to issues in the Phase I, II and III trials shall be completed sixty (60) days before the commencement of the Phase I trial.

**24. Expert Witness Identification and Discovery**

a. Within ninety (90) days from the entry of this CMO, plaintiffs shall serve on defendants a list of expert witnesses they may call at each of the Phase trials, identifying the Phase trial at which the expert is expected to testify. Fifteen (15) days thereafter, the plaintiffs shall serve on the defendants a written report prepared and signed by the witness, which report shall include:

- I.) A complete statement of all opinions to be expressed and the basis and reasons therefore;
- II.) The data or other information considered by the witness in forming the opinions;
- III.) Any exhibits to be used as a summary of or in support of the opinions;
- IV.) The qualifications of the witness, including list of all publications authored by the witness within the preceding ten (10) years;
- V.) The compensation to be paid for the study and testimony;
- VI.) A listing of any other cases in which the witness has testified as an expert at trial or by deposition within the preceding four (4) years.

b. Within one hundred twenty (120) days from the entry of this CMO, defendants shall serve on plaintiffs a list of expert witnesses they may call at each of the Phase trials, identifying the Phase trial at which the expert is expected to testify. Fifteen (15) days thereafter, the defendants shall serve on the plaintiffs a written report prepared and signed by the witness, which report shall include:

- I.) A complete statement of all opinions to be expressed and the basis and reasons therefore;
- II.) The data or other information considered by the witness in forming the opinions;

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- iii.) Any exhibits to be used as a summary or in support of the opinions;
- iv.) The qualifications of the witness, including list of all publications authored by the witness within the preceding ten (10) years;
- v.) The compensation to be paid for the study and testimony;
- vi.) A listing of any other cases in which the witness has testified as an expert at trial or by deposition within the preceding four (4) years.

Failure to comply with the report requirements may result in exclusion of the expert's testimony at trial.

- c. Depositions of expert witnesses may be noticed ten (10) days after the exchange of reports is completed and shall be completed at least seventy-five (75) days before the date of the commencement of the Phase I trial. All depositions of expert witnesses shall be conducted in accordance with the provisions set forth in Paragraphs 16(b) and 17 above.

#### 25. Discovery of Absent Class Members

The time period for discovery of absent class members will be set by the Court after it determines the identities of those individuals who will pursue their claims against defendants in this suit.

#### 26. Procedural and Other Motions

The Court has established a regular monthly motion day to hear motions in Trial Order 1.

#### 27. Dispositive Motions

Any dispositive motions, including summary judgment motions, must be filed no later than ten (10) days after the close of expert discovery. All such motions shall be heard on December 6, 2000.

#### 28. Daubert/Foret Motions and Motions in Limine

All Daubert/Foret motions and motions in limine must be filed no later than ten (10) days after the close of expert discovery. All such motions shall be heard on

December 6, 2000.

**29. Preliminary and Final Witness and Exhibit Lists**

- a. Plaintiffs shall file and serve a preliminary list of witnesses sixty (60) days after entry of CMO2 and a final list of witnesses and a final exhibit list no later than one hundred twenty (120) days before the commencement of Phase I trial.
- b. Defendants shall file and serve a preliminary list of witnesses ninety (90) days after entry of CMO2 and a final list of witnesses and a final exhibit list no later than one-hundred twenty (120) days before the commencement of the Phase I trial.
- c. Presentation of Testimonial, Demonstrative and Real Evidence: Upon submission of final pre-trial exhibit lists, parties shall submit to the Court DC-ROMs containing images of the listed exhibits in standard Group IV TIFF format.  
In an effort to speed the admission and display of evidence, the parties shall share a single multimedia presentation network consisting of a series of monitors and projection screens throughout the courtroom for the presentation of documents, demonstrative aids and video during the trial. This network shall be for computer signal and video signal display only and shall not require the parties to share a computer or data files.

**30. Completion of Discovery**

All discovery must be completed seventy-five (75) days before the commencement of the Phase I trial.

**31. Verdict Forms, Jury Interrogatories and Jury Instructions**

All parties shall submit to the Court and Special Master and serve upon liaison counsel proposed verdict forms, special jury interrogatories and proposed jury instructions for Phase I, II and III trials no later than seventy-five (75) days before the commencement of the Phase I trial. Objections to all such submissions shall be made in writing no later than sixty (60) days before the commencement of the Phase I trial.

**32. Written Objections to Exhibits**

All objections to the admissibility of all exhibits to be offered shall be filed no later than December 8, 2000.

**33. Pre-Trial Order**

The final Pre-trial Order shall be signed by all parties, filed with the Court and served on the Special Master no later than December 8, 2000.

**34. Pre-Trial Conference**

The final Pre-Trial Conference is set for December 13, 2000 at 10:00 a.m.

**35. Conferring with the Special Master**

Any party may, upon reasonable notice, request the Special Master to meet and confer with the parties on any matter covered by this order. Ex parte conferences with the Special Master are prohibited.

New Orleans, Louisiana, this 24/11 day of February, 2000.

  
Richard J. Ganucheau  
JUDGE, Division K

Produced by R.R.I.C.  
in accordance with  
the requirements of  
the Federal Rules of Civil  
Procedure

CIVIL DISTRICT COURT FOR THE PARISH OF ORLEANS

STATE OF LOUISIANA

NO. 96-8461

DIVISION "K"

GLORIA SCOTT, ET AL

VERSUS

THE AMERICAN TOBACCO COMPANY, INC., ET AL

JUDGMENT

These matters came up for hearing on the 20<sup>th</sup> day of December, 1999:

1. Plaintiff's Motion for Reconsideration of the Court's September 14, 1999 Order Requiring Television and Additional Print Notice;
2. Plaintiffs' Objections to Defendants' Notice Plan and Form of Notice;
3. Plaintiffs' Objections to Defendants' Proposed Trial Plan and Trial Issues;
4. Defendants' Objections to Plaintiffs' Notice Plan and Form of Notice;
5. Defendants' Motion for Notice Plan and Form of Notice; and
6. Defendants' Objections to the Plaintiffs' Proposed Trial Plan and Trial Issues.

After considering the Memoranda, applicable law and argument of counsel:

IT IS ORDERED that the Plaintiffs' Motion for Reconsideration of the Court's September 14, 1999 Order Requiring Television and Additional Print Notice, the Plaintiffs' Objections to Defendants' Notice Plan and Form of Notice, the Defendants' Objections to Plaintiffs' Notice Plan and Form of Notice, and the Defendants' Motion for Notice and Plan and Form of Notice are GRANTED in part and DENIED in part. The Court adopts its September 14, 1999 Order with the following modifications:

- a) The print notices published in the daily and weekly newspapers and in the publications referenced in the original Order, shall be  $\frac{1}{2}$  page in size;
- b) Standard fonts and font sizes shall be used in the print notice;
- c) Color fonts and color borders are not to be used;
- d) A standard 1 point black border shall be used to distinguish the print notice;
- e) No coupons are permitted in the print notice;
- f) The print notice shall be published in Sunday editions of the listed newspapers

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- two times over a 30-day period;
- g) The print notice shall be published in daily editions of the newspapers listed four times over a 30-day period;
  - h) The print notice shall be published one time in the weekly publications listed;
  - i) The print notice shall be published one time in the magazine publications listed;
  - j) The first print notice shall be published no later than sixty (60) days after the entry of this Judgment in the newspapers and the magazines listed in the Order of September 14, 1999;
  - k) The print notice shall contain a toll-free number which will provide tape recorded information in response to inquiries from class members; such information shall include the class definition, opt-out rights and the opt-out period, the name and telephone number of the Special Master and the address to which class members send their opt-out notices;
  - l) The print notice shall reference a World Wide Website address, which shall contain the print notice, the name and telephone number of the Special Master, the toll-free telephone number, opt-out rights and the opt-out period and the address to which class members send their opt-out notices;
  - m) The opt-out period is forty-five (45) days, such period to begin from the scheduled publication date of the last print notice in any publication. Opt-outs are to be instructed to write to the address listed in the notice or the Scott v. American Tobacco Special Master, Dominic J. Gianna, , 201 St. Charles Avenue, 31st Floor, New Orleans, LA 70170-3100;
  - n) The print notice shall be published in English and Spanish in any Hispanic publication. All inquiries in the Spanish language shall be referred to the Special Master, who will refer the inquiries to Mr. Raul Bencomo for translation;
  - o) The broadcast television notices ordered by this Court's September 14, 1999 Order are to be broadcast in the "average prime times" (Option 2) referenced in the October 28, 1998 Affidavit of Peter Hillsbee and the broadcast of such notice shall begin no later than sixty (60) days after entry of this Judgment. The notice must contain a brief narrative of the class definition, the toll free

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number, the World Wide Website address, the name and telephone number of the Special Master, a brief description of the class member opt-out rights and the opt-out date;

- p) All notices must make clear that this action seeks to establish a fund for medical monitoring/cessation of smoking, that damages for personal injury will not be awarded, that the purpose of medical monitoring is to detect latent disease or injury and not treat it, that the class representatives are not seeking direct monetary sums, and must not suggest that class members are either entitled to monetary damages or that they will receive money for medical monitoring or cessation of smoking programs;
- q) All notices must inform class members that the relief sought is a medical monitoring program which will require class members to undergo tests over some period of time and cessation of smoking programs which may require participation in medically supervised programs designed to stop them from smoking;
- r) All notices must inform class members that the defendants deny all allegations of wrongdoing and liability for all damages, and claim that participation in this class action may bar monetary claims for current personal injuries;
- s) All notices shall direct inquiries to the Scott v. American Tobacco Special Master, Dominic J. Gianna, Middleberg, Riddle & Gianna, et al (504) 207-7307, 201 St Charles Avenue, 31<sup>st</sup> Floor, New Orleans, Louisiana 70170-3100;
- t) All notices must inform class members not to call the Court or the Clerk of Court;
- u) Registration forms are not required at this time;
- v) The content and form of the print notice, the press releases, the courthouse communications, the television notice, the Internet communication and the tape-recorded information available on the toll-free number must be submitted to the Special Master and the Court at least twenty-one (21) days before publication/dissemination.

IT IS FURTHER ORDERED THAT Plaintiffs Objections to Defendants' Proposed Trial Plan and Trial Issues and Defendants' Objections to Plaintiffs' Proposed Trial Plan and Trial Issues, are DENIED in part and GRANTED in part. The Court issues Trial Order No. 1 and Case Management Order No. 2, attached, as the Trial and Pre-Trial Plans that will govern the proceedings in this matter.

JUDGMENT READ, RENDERED AND SIGNED in New Orleans, Louisiana, this  
24<sup>th</sup> day of February, 2000.

  
Richard J. Gaschaeu

JUDGE, Division "K"

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in  
HUMPHREY

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CIVIL DISTRICT COURT FOR THE PARISH OF ORLEANS

STATE OF LOUISIANA

NO. 98-8461

DIVISION "K"

GLORIA SCOTT, ET AL

VERSUS

THE AMERICAN TOBACCO COMPANY, INC., ET AL

TRIAL ORDER 1

On September 14, 1999, this Court ordered the parties to submit to the Court and to the Special Master their proposed Trial Plans and objections to those Trial Plans. On December 20, 1999, the Court heard oral argument on this matter.

After considering the Trial Plans proposed by the parties, the objections to those Plans, the Memoranda submitted by the parties, the argument of counsel, and the Louisiana Code of Civil Procedure Article 593.1 (1984), the Court concludes that this matter shall be managed in accordance with La. C.C.P. Art. 593.1 (C)(1984). The trial of this matter shall be conducted in phases. Consequently,

IT IS ORDERED that the Phase I trial of this matter commence on the 15th day of January, 2001. The Phase I trial shall adjudicate the liability of the defendants for all damages common to the class certified by the Court on April 16, 1997. The issues in the Phase I trial relating to liability for all damages will be fault and causation, namely, whether the defendants are legally liable for damages that are alleged to be common to the class. The issues include, but are not necessarily limited to, (1) whether the class representatives smoked; (2) whether nicotine in the defendants' products caused the class representatives to smoke; (3) whether the defendants' products were defective in relation to nicotine and addiction as a matter of Louisiana law; and (4) whether the addiction of the class representatives to nicotine caused conditions or effects that justify medical monitoring or other class-wide remedies or damages, such as smoking cessation remedies, for which the defendants are legally responsible.

The Phase II trial, before the same jury, shall commence 14 days after the completion of the Phase I trial and shall, pursuant to La. C.C.P. Art. 593.1 (C)(2) determine any items of damage common to the class and the basis for the assessment of those damages, e.g., whether the class is entitled to compensation for medical monitoring

# INTRODUCTION

and/or smoking cessation, and, if so, the bases for assessing those damages on a class-wide basis.

The Phase III trial, before the same jury, shall commence 14 days after the completion of the Phase II trial, and shall, pursuant to La. C.C.P. Art. 593.1 (C)(3), assess the common damages determined in the Phase II trial. On the basis of the criteria or standards established by the Phase II trial for assessing common or class damages to the members of the class, the Phase III trial will assess, or award, the common damages. The Court will sign a judgment, pursuant to La. C.C.P. Art 593 (D), upon the completion of the Phase III trial, and designate the said judgment as appealable pursuant to La. C.C.P. Art 1984, as amended.

Subsequent trials will be set to determine and assess individual damages not common to the class in accordance with La. C.C.P. Art. 593.1 (C)(4)(1984).

The Court adopts Case Management Order No. 2 attached. Such order shall control the progress of all pre-trial proceedings. The provisions of Case Management Order No. 2 shall be followed strictly and are not subject to change by agreement of counsel without the permission of the Court.

All discovery disputes are hereby referred to the Special Master, as set forth in Case Management Order No. 2. The Special Master, who will conduct hearings and conferences, will make arrangements for the stenographic recording of all such hearings and conferences. The Special Master shall hear all discovery disputes expeditiously and shall file his report and recommendations as soon as is practicable after each hearing or conference.

The Court sets the following special hearing dates for all matters connected with this case. All hearings will be at 10:00 a.m.:

March 22, 2000	August 16, 2000
April 24, 2000	September 28, 2000
May 24, 2000	October 26, 2000
June 28, 2000	November 22, 2000
July 18, 2000	December 6, 2000

The Court shall issue a formal Pre-Trial Order form as a guideline for the confection of a final joint Pre-Trial Order which will control the trial of this case. The Pre-Trial Order shall be filed in the record ten (10) days before the final Pre-Trial Conference.

The final Pre-Trial Conference is set for Thursday, December 13, 2000 at 10:00 a.m.

New Orleans, Louisiana, this 24-11 day of February, 2000.

  
Richard J. Ganucheau  
JUDGE, Division "K"

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Lilly 3

Curriculum Vitae  
Arny's Clifton Lilly, Jr.

Personal History

Arny's Clifton (Cliff) Lilly, Jr.

[DELETED]  
Born: 1934  
Beckley, West Virginia

[DELETED]

Married: Agnes Micou Lilly - June 9, 1956

Children: 3

Educational Background

Public Schools in Virginia and West Virginia

B.S. Virginia Polytechnic Institute & State Univ.  
Blacksburg, Virginia - Petroleum Engineering -1957

M.S. Carnegie Mellon University  
Pittsburgh, Pennsylvania - Physics -1963-65

Ph.D. Virginia Polytechnic Institute & State Univ.  
Blacksburg, Virginia - Physics -1989

Professional History

Gulf Research & Development, Pittsburgh, PA.  
Engineer -1957-1960  
Research Physicist -1960-1965

Philip Morris, USA, Research Center, Richmond, VA:  
Research Scientist -1965-1967  
Senior Scientist -1967-1974  
Associate Principal Scientist -1974-1981  
Principal Scientist -1981-1984  
Research Fellow & Director Technology Assessment -1984-1996  
Vice President, Technology/Research Fellow -1996-Present

Professional Societies/Memberships

American Physical Society  
Sigma XI  
Conference Board

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### Honors

Industrial Research IR- 100 Product Award	-1972
Philip Morris Silver Ring Merit Award	-1975
Philip Morris Chairman's Award	-1988 & 1989
Philip Morris Gold Ring Merit Award	-1989

Recognized for Leadership in the Development of Iron Aluminides by Dr. Y.A. Chang, Board of Directors of TMS on February 16, 1998 as part of the International Symposium on "Iron Aluminides: Alloy Design, Processing, Properties, and Applications," 127th TMS Annual Meeting, San Antonio, Texas, February 16-19, 1998

### Additional Business Related Topics

Member, Philip Morris Companies Technical Synergy Steering Committee, Present.

Chairperson, Philip Morris Companies Emerging Technologies Core Team, Present.

Coordinator, Philip Morris Companies, Inc. Technical Synergy Symposium: *Technology Management in the 90s and Beyond*, Richmond, Virginia, September 25-26, 1991.

Technical Chairman, Fifth Philip Morris Science Symposium: *Natural Products Research: The Impact of Scientific Advances*, Richmond, Virginia, October 17, 1985.

Chairman of the Philip Morris Visiting Scientist Program, which in four years brought in fifteen prominent scientists from throughout the world.

Organizer, Visiting Lecture Series, Philip Morris USA Research Center, Richmond, Virginia, 1983-84 which included over 25 lectures by prominent scientists throughout the world, including several Nobel Prize Winners.

6. A.C. Lilly and D.A. Lowitz, "Convenient Expressions for an Electrostatic Quadrupole Lens," Talk at Pittsburgh Conference on Analytical Chemistry and Applied Spectrometry, March (1963).
7. A.C. Lilly, A. S. Kasmer, and T. J. Weismann, "An Electron Impact Ion Source Employing Strong-Focusing of Electron and Ion Beams," Talk at Pittsburgh Conference on Analytical Chemistry and Applied Spectrometry (1963).
8. A.C. Lilly and T. J. Weismann, "Ion Paths in Three-Dimensional Fields," Bull. Of the ASTM E-14 Meeting, (1963).

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9. A.C. Lilly and T.J. Weismann, "Ion Paths in Three-Dimensional Non-Homogeneous Magnetic Fields," J. of Appl. Phys., 36, (1965).
  10. R.V. Dietrich and A.C. Lilly, "K<sup>40</sup> A<sup>40</sup> Age Dating of the Mount Airy Granite," Talk at Southeastern G.S.M. Meeting (1963).
  11. A.C. Lilly and T. J. Weismann, "Fringing Field Corrections for Electrostatic Quadrupole Lenses (Theory)," Bull. Of the ASTM E-14 Meeting, (1965).
  12. A.C. Lilly and J.R. McDowell, "High Field Conduction in Mylar and Teflon Films," J. of Appl. Phys., 39, 141 (1968).
  13. A.C. Lilly, D.A. Lowitz and J.C. Schug, "Space Charge Conduction in Insulators," J. of Appl. Phys., 39, 4360 (1968).
  14. A.C. Lilly and J.R. McDowell, Invited talk published as "High Field Conduction in Insulators," Proceedings of Electret Symposium, Electrochemical Society, 64-65 (1968).
  15. W.F. Kuhn, G.J. Levins, and A.C. Lilly, "Electron Affinities and Ionization Potentials of Phthalate Compounds," J. of Chem. Phys., 48, 5550 (1968).
  16. A.C. Lilly and I. Hasegawa, "Spurious Magnetic Field Compensation for an Electron Microscope," Rev. of Sci. Inst., 40, 113 (1969).
  17. A.C. Lilly, "Conduction in Insulators," Invited Talk Symposium at N.C. State University (1969).
  18. A.C. Lilly, "High Field Processes in Insulators," Invited Talk NASA Symposium of the Organic Solid State (1969).
  19. J.C. Schug, A.C. Lilly and D.A. Lowitz, "Schottky Currents in Dielectric Films," Phy. Rev. B, 1, 4811 (1970).
  20. A.C. Lilly, J.H. Stewart and R.M. Henderson, "Thermally Stimulated Currents in Mylar, High-Temperature Low-Field Case," J. of Appl. Phys., 41, 2001 (1970).
  21. A.C. Lilly, R.M. Henderson and P.S. Sharp, "Thermally Stimulated Currents in Mylar, High-Field Low-Temperature Case," J. of Appl. Phys., 41, 2001 (1970).
  22. A.C. Lilly, B.C. LaRoy and C.O. Tiller, "Transport Properties of LaF. Thin Films," Talk Electrochemical Society (May, 1972).
  23. A.C. Lilly, B.C. LaRoy and C.O. Tiller, "Transport Properties of LaF. Thin Films," J. of the Electrochemical Society, 120, 1673 (1973).
  24. B.C. LaRoy, A.C. Lilly and C.O. Tiller, "Thin-Film Solid State Reducible Gas Electrodes Using LaF. Electrolyte," Talk Electrochemical Society (May, 1972).

- PRODUCTION**
25. B.C. LaRoy, A.C. Lilly and C.O. Tiller, "Thin-Film Solid State Reducible Gas Electrodes using LaF<sub>3</sub> Electrolyte," J. of the Electrochemical Society, 120, 1668 (1973).
  26. C.O. Tiller, A.C. Lilly and B.C. LaRoy, "Ionic Conduction in LaF<sub>3</sub> Thin Films," Phys. Rev. B, 8, 4787 (1973).
  27. A.C. Lilly, "Kinetics of Tobacco Decomposition," 2nd Philip Morris Science Symposium (1976).
  28. A.C. Lilly, "Overview of P.M. Research Center, Industrial, Scientific and Medical Users of Microwaves," Co-Chairman- Laszlo and Lilly, (March, 1979).
  29. A.C. Lilly, P. Martin and E. Stultz, "Lasers in the Tobacco Industry," 1981 CLEOS Meeting; Proceedings of Technical Program Electro-Optics/81 Conference, 139-146, (1981).
  30. D.A. Lowrie, J.F. Whidby, A.C. Lilly and W.A. Farone, "Millimeter Wave Scattering Dielectric Spectroscopy," Talk at American Physical Society, (March, 1985).
  31. J.C. Schug, R. D. Reid, A.C. Lilly and R. W. Dwyer, "UHF-RPA Calculations on Large Polyene Systems," Talk at American Physical Society, (March 1986).
  32. J.C. Schug, R. D. Reid, A. C. Lilly and R. W. Dwyer, "UHF RPA Calculations on Large Model Polyene Systems," Chemical Physics Letters, 128, 1; 5-10; (July 11), 1986.
  33. L.A. Burke, J. Kao, A.C. Lilly, "Combination of MOMM and VEH Methods to Calculate Electronic Properties of Polymers," J. Computational Chemistry, 8, 2, 107-116 (1987).
  34. J. Kao and A.C. Lilly, "Theoretical Studies of Electronic Properties of Polyacene, Poly(1,4-Dihydrobenzo-1, 4-Dihydrobenzene), Poly(p-Phenylenes), and Poly(P-1, 4-Dihydrobenzene) and their Hetero (N, O and S) Substituted Derivatives, J. of the American Chemical Society, #109(14); 4149-4157; 1987.
  35. R.D. Reid, J.C. Schug, A.C. Lilly and R. W. Dwyer, "UHF-RPA Investigation of Soliton-like Excitations in Transpolyacetylene; J. of Chemical Physics, #88(3); 2049-2056; 1988.
  36. W.F. Kuhn, D. Leister, J. Kao and A.C. Lilly, "Comparison of Theoretical and Experimental Ionization Potentials of Nicotine and Related Molecules," J. of Molecular Structure, #212; 37-44; 1989.
  37. A.C. Lilly, "Monte Carlo Simulation of Aqueous Dilute Solutions of Polyhydric Alcohols," Dissertation, 1989.
  38. A.C. Lilly, F. J. Beers and J.C. Schug, "NPT Ensemble Monte-Carlo Simulation of Ethanol in Water," J. of Molecular Structure (Theochem), #209; 59-75; 1990.

- RECENT PUBLICATIONS**
39. A.C. Lilly, S.C. Deevi, and Z.P. Gibbs, "Electrical Properties of Iron Aluminides," presented at the International Symposium On "Iron Aluminides: Alloy Design, Processing, Properties, and Applications" 127th TMS Annual Meeting, San Antonio, Texas, February 16-19, 1998.
  40. A.C. Lilly, S.C. Deevi, and Z.P. Gibbs, "Electrical Properties of Iron Aluminides," to be published in Materials Science and Engineering A (1998).
  41. A.C. Lilly, S.C. Deevi, V.K. Sikka, G. Fleischhauer, and S. Scorey, "Development and Production of FeAl-Based Intermetallic Alloys" to be presented at the 3rd International Workshop on "Ordered Intermetallic Alloys and Composites," April 4-10, Hangzhou, China.

**Patents**

1. A.C. Lilly and T.J. Weismann, "Magnetic Field Free Ion Source with Adjustable Electron Gun," U.S. Patent #3182190 (1965).
2. A.C. Lilly and E.M. Gentry, "Electronic Thermometer," U.S. Patent #3548661 (1970).
3. A.C. Lilly and E.M. Gentry, "Method and Apparatus for Medical Diagnosis," U.S. Patent #3656474 (1972).
4. A.C. Lilly and C.O. Tiller, "Solid State Battery Having a Rare Earth Fluoride Electrolyte," U.S. Patent #3657016 (1972).
5. A.C. Lilly and C.O. Tiller, "Thin Film Reducible Gas Sensor," U.S. Patent #3719964 (1973).
6. A.C. Lilly and C.O. Tiller, "Oxygen-Responsive Electric Current Supply," U.S. Patent #3698995 (1972).
7. A.C. Lilly, F. Watson, P. Martin and J. Price, "Method and System for Detection of Thin Metal Layers in Packaged Articles," U.S. Patent #4166973 (1979).
8. A.C. Lilly, W. Claflin, W. Hardesty, H. Lanzillotti, "Method of Electrically Perforating a Planar Web," U.S. Patent #4207458 (1980).
9. A.C. Lilly, W. Claflin, W. Hardesty, H. Lanzillotti, "Apparatus for Electrical Perforation of Webs," U.S. Patent #4236062 (1980).
10. A.C. Lilly, P. Martin, E. Grollimund, W. Duley, W. Claflin, "Method and Apparatus for Perforating Articles by Laser," U.S. Patent #4224498 (1980).
11. A.C. Lilly, P. Martin, E. Grollimund, W. Duley, W. Claflin, "Apparatus for Perforating Articles by Laser," U.S. Patent #4224498 (1980).

12. H.V. Lanzillotti, G.H. Burnett, A.R. Wayte, T.S. Osdene, W.E. Claflin, A.C. Lilly, J.F. Nienow, "Method of Making Smoking Articles," U.S. Patent #4347855 (1982).
13. E. Cashwell, E.C. Grollimund, W.W. Duley, A.C. Lilly, W.E. Claflin, E.B. Stultz, P. Martin, "Apparatus for Laser Perforation of Transported Article," U.S. Patent #4349719 (1982).
14. G.H. Burnett, W. E. Claflin, H. V. Lanzillotti, A. C. Lilly, J. F. Nienow, T. S. Osdene, A. R. Wayte, "Smoking Article," U.S. Patent #4391285 (1983).
15. A.C. Lilly, W. E. Claflin, E. B. Stultz, U. A. Brooks, P. Martin, "Method and Apparatus for Perforation of Sheet Material by Laser," U.S. Patent #4410785 (1983).
16. A.C. Lilly, W. E. Claflin, E. B. Stultz, U. A. Brooks, P. Martin, "Method and System for Laser Perforation of Sheet Material," U.S. Patent #4439663.
17. J. L. Banyasz, C. D. Owens, E. D. Mooz, A. C. Lilly, P. Martin, H. B. Merritt, B. A. Semp, "Process for Increasing the Filling Power of Tobacco," U.S. Patent #4497330 (1985).
18. F.B. Fischer, A. C. Lilly, "Expanded Wrapper and Smoking Articles Including Same," U.S. Patent #4574821 (1986).
19. A.C. Lilly, H. B. Merritt, C. D. Owens, "Process for Modifying the Smoke Flavor Characteristics of Tobacco," U.S. Patent #4607646.
20. A.C. Lilly, M. A. Serrano, K. S. Houghton, H. V. Laszillotti, E. B. Sanders, C. R. Hayward, J. R. Hearn, D. B. Losee, "Smoking Article," U.S. Patent #4966171 (1990).
21. A.C. Lilly, M. A. Serrano, K. S. Houghton, H. V. Lanzillotti, E. B. Sanders, C. R. Hayward, J. R. Hearn, D. B. Losee, "Smoking Article," U.S. patent #4991606 (1990).
22. A.C. Lilly, A.G. Kallianox, J. F. Whidby, R. W. Dwyer, "Wrapper for Smoking Articles and Method for Preparing Same," U.S. Patent #4998542 (1991).
23. A.C. Lilly, W. A. Nystrom, L. C. Lanzell, H. V. Lanzillotti, C. R. Hayward, J.R. Hearn: "Carbon Heat Source," U.S. Patent #5076296 (1991).
24. A.C. Lilly, J. M. Ehrman, C. H. Goldsmith, E. C. Grollimund, H. V. Lanzillotti, "Carbon Heat Smoking Article With Reusable Body," U.S. Patent #5240012 (1993).
25. A.C. Lilly, S. C. Deevi, S. Deevi, M. R. Hajaligol, H. V. Lanzillotti, D. B. Losee, M. L. Watkins, "Manufacturing of Composite Heat Sources Containing Carbon and Metal Species," U.S. Patent #5246018 (1993).

- RECORDED BY
26. A.C. Lilly, E. S. Gee, D. B. Losee, J. L. Myracle, C. H. Morgan, F. M. Sprinkel, F. V. Utsch, J. F. Whidby, "(Design) Electrical Cigarette," U.S. Patent #D346878 (1994).
  27. A.C. Lilly, E. S. Gee, D. B. Losee, J. L. Myracle, C. H. Morgan, F. M. Sprinkel, F. V. Utsch, J. F. Whidby, "(Design) Electrical Cigarette," U.S. Patent #D347490.
  28. A.C. Lilly, M. A. Serrano, K. S. Houghton, H. V. Lanzillotti, E. B. Sanders, C. R. Hayward, J. R. Hearn, D. B. Losee, G. S. Fleischhauer, W. G. Hough, "Smoking Article," U.S. Patent 5345951 (1994).
  29. Counts, M. E., Houck, W. G. Jr., Houghton, K. S., Lilly, A.C. Jr., Lipowicz, P. J., Myracle, J. L., Sprinkel, F. M., Washington, J. M., Wrenn, S. E., "Electrical Smoking Article Having Continuous Tobacco Flavor Web and Flavor Cassette Therefor," U.S. Patent 5479948 (1996).
  30. Deevi, S. C., Lilly, A. C. Jr., "Electrically Powered Ceramic Composite Heater," U.S. Patent 5498855 (1996).
  31. Sikka, V. K., Deevi, S.C., Fleischhauer, G. S. Hajaligol, M. R., A. C. Lilly, "Aluminum Containing Iron-Base Alloys Useful as Electrical Resistance Heating Elements," U.S. Patent 5595706 (1997).
  32. Collins, A. L., Counts, M. E., Das, A., Deevi, S. C., Fleischhauer, G. S., Higgins, C. T., Houck, W. G., Keen, B. J., Lee, R. E., Lilly, A. C., Losee, D. B., McCaffery, H. J., Morgan, C. H., Raymond, W. R., Ripley, R. L., Ritt, R. R., Scott, G. R., Sprinkel, F. M., Watkins, M. L., Wrenn, S. E., Utsch, F. V., "Flavor Generating Article and Method for Making Same," U.S. Patent 5613504 (1997).
  33. Sikka, V. K., Deevi, S. C., Fleischhauer, G. S., Hajaligol, Lilly, A. C., "Iron Aluminide Useful as Electrical Resistance Heating Elements," U. S. Patent 5620651 (1997).
  34. Hajaligol, M. R., Fleischhauer, G. S., Deevi, S. C., Higgins, C. T., Hayes, P. H., Herman, H., Ganzer, R. V., Collins, A. L., Keen, B. J., Laroy, B. C., Lilly, A. C., "Tubular Heater for Use In An Electrical Smoking Article," U. S. Patent 5665262 (1997).

#### Prior Testimony

In the past four years, Dr. Lilly has testified in the following cases: Philip Morris v. ABC (Richmond, VA) (November 30, 1995; August 8, 1995) (deposition); Arch v. American Tobacco Co. (Philadelphia, PA) (September 3, 1997) (this deposition was cross-noticed in the following cases: Small, Hoberman, Frosina, Zito and State of Washington v. Philip Morris Incorporated, et al.); State of Washington v. American Tobacco Co., et al. (Seattle, WA) (October 30, 1997)

(deposition); State of Minnesota v. Philip Morris Incorporated, et al. (Minneapolis, MN) (April 21, 1998) (trial); State of Oklahoma v. RJ Reynolds Tobacco Co., et al. (Richmond, VA) (October 14, 1998); and Engle v. RJ Reynolds Tobacco Co., et al. (Richmond, VA) (May 7, 1998) (deposition) (April 15-16, 1999) (trial).

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KATHLEEN  
MILLER  
for respondent

CurriculumVitae  
Arnys Clifton Lilly, Jr.

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Lilly #3A  
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Personal History

Arnys Clifton (Cliff) Lilly, Jr.  
9641 Waterfowl Flyway  
Woodland Pond  
Chesterfield, Virginia 23832

Born: June 3, 1934  
Beckley, West Virginia

Married: Agnes Micou Lilly - June 9, 1956

Children: 3

Educational Background

Public Schools in Virginia and West Virginia

B.S. Virginia Polytechnic Institute & State Univ.  
Blacksburg, Virginia - Petroleum Engineering - 1957

M.S. Carnegie Mellon University  
Pittsburgh, Pennsylvania - Physics - 1963-65

Ph.D. Virginia Polytechnic Institute & State Univ.  
Blacksburg, Virginia - Physics - 1989

Professional History

Gulf Research & Development, Pittsburgh, PA.  
Engineer - 1957-1960  
Research Physicist - 1960-1965

Philip Morris, USA, Research Center, Richmond, VA.  
Research Scientist - 1965-1967  
Senior Scientist - 1967-1974  
Associate Principal Scientist - 1974-1981  
Principal Scientist - 1981-1984

Research Fellow & Director Technology Assessment  
Vice President, Technology/Research Fellow - 1984-1996  
- 1996-Present

Professional Societies/Memberships

American Physical Society  
Sigma XI  
Conference Board

## Honors

Industrial Research IR-100 Product Award	- 1972
Philip Morris Silver Ring Merit Award	- 1975
Philip Morris Chairman's Award	- 1988 & 1989
Philip Morris Gold Ring Merit Award	- 1989

Recognized for Leadership in the Development of Iron Aluminides by Dr. Y. A. Chang, Board of Directors of TMS on February 16, 1998 as part of the International Symposium on "Iron Aluminides: Alloy Design, Processing, Properties, and Applications," 127<sup>th</sup> TMS Annual Meeting, San Antonio, Texas, February 16-19, 1998.

## Additional Business Related Topics

Member, Philip Morris Companies Technical Synergy Steering Committee, Present.

Chairperson, Philip Morris Companies Emerging Technologies Core Team, Present.

Coordinator, Philip Morris Companies, Inc. Technical Synergy Symposium: *Technology Management in the 90s and Beyond*, Richmond, Virginia, September 25-26, 1991.

Technical Chairman, Fifth Philip Morris Science Symposium: *Natural Products Research: The Impact of Scientific Advances*, Richmond, Virginia, October 17, 1985.

Chairman of the Philip Morris Visiting Scientist Program, which in four years brought in fifteen prominent scientists from throughout the world.

Organizer, Visiting Lecture Series, Philip Morris USA Research Center, Richmond, Virginia, 1983-84 which included over 25 lectures by prominent scientists throughout the world, including several Nobel Prize Winners.

## Memberships/Affiliations National Science Committees

Member, External Advisory Committee, College of Natural Sciences, Colorado State University - 1984-1990.

Chairman, External Review Committee, Department of Physics, Virginia Commonwealth University - 1990.

Member, Program Committee Southeastern Region of the American Chemical Society, Virginia Commonwealth University - 1991

Member, Local Organizing Committee International Symposium on the Physics and Chemistry of Finite Systems: From Clusters to Crystals, Virginia Commonwealth University, 1991, 1995, and 1999.

Member, Advisory Council, Department of Physics, Virginia Polytechnic Institute and State University, 1989-Present.

Currently

Member Advisory Board, Applied Physics Program, Northern Virginia Graduate Center, Department of Physics, Virginia Polytechnic Institute and State University.

Affiliate Professor, Department of Physics, Virginia Commonwealth University.

Publications & Technical Meeting Presentations

1. A. C. Lilly, "The Desiderata of the Representative Sample," Mineral Industrial Journal, 5, (1957).
2. A. C. Lilly and D. A. Lowitz, "The Dielectric Characteristics of Selected Layer Silicates," Bull. Of the G.S.A. 70, 159, (1963).
3. W. T. Caner, A. C. Lilly, and I. H. Milne, "X-Ray Diffractometer Gear-Changing Mechanism," Anal. Chem., 32, 893 (1960).
4. A. C. Lilly, T. J. Weismann, and D. A. Lowitz, "An Experiment Involving the Numerical Determination of Ion Paths in Non-Homogeneous Magnetic Fields," Bull. Of the ASTM E-14 Meeting, (1962).
5. A. C. Lilly, T. J. Weismann, and D. A. Lowitz, "Numerical Determination of Ion Paths in Non-Homogeneous Magnetic Fields," J. of Appl. Phys., 34, 631 (1963).
6. A. C. Lilly and D. A. Lowitz, "Convenient Expressions for an Electrostatic Quadrupole Lens," Talk at Pittsburgh Conference on Analytical Chemistry and Applied Spectrometry, March (1963).
7. A. C. Lilly, A. S. Kasmer, and T. J. Weismann, "An Electron Impact Ion Source Employing Strong-Focusing of Electron and Ion Beams," Talk at Pittsburgh Conference on Analytical Chemistry and Analytical Chemistry and Applied Spectrometry (1963).
8. A. C. Lilly and T. J. Weismann, "Ion Paths in Three-Dimensional Fields," Bull. Of the ASTM E-14 Meeting, (1963).
9. A. C. Lilly and T. J. Weismann, "Ion Paths in Three-Dimensional Non-Homogeneous Magnetic Fields," J. of Appl. Phys., 36, (1965).
10. R. V. Dietrich and A. C. Lilly, " $K^{40}$ - $A^{40}$  Age Dating of the Mount Airy Granite," Talk at Southeastern G.S.M. Meeting (1963).

11. A. C. Lilly and T. J. Weismann, "Fringing Field Corrections for Electrostatic Quadrupole Lenses (Theory)," Bull. Of the ASTM E-14 Meeting, (1965).
12. A. C. Lilly and J. R. McDowell, "High Field Conduction in Mylar and Teflon Films," J. of Appl. Phys., 39, 141 (1968).
13. A. C. Lilly, D. A. Lowitz and J. C. Schug, "Space Charge Conduction in Insulators," J. of Appl. Phys., 39, 4360 (1968).
14. A. C. Lilly and J. R. McDowell, Invited talk published as "High Field Conduction in Insulators," Proceedings of Electret Symposium, Electrochemical Society, 64-65 (1968).
15. W. F. Kuhn, E. J. Levins, and A. C. Lilly, "Electron Affinities and Ionization Potentials of Phthalate Compounds," J. of Chem. Phys., 48, 5550 (1968).
16. A. C. Lilly and I. Hasegawa, "Spurious Magnetic Field Compensation for an Electron Microscope," Rev. of Sci. Inst., 40, 113 (1969).
17. A. C. Lilly, "Conduction in Insulators," Invited Talk Symposium at N.C. State University (1969).
18. A. C. Lilly, "High Field Processes in Insulators," Invited Talk NASA Symposium of the Organic Solid State (1969).
19. J. G. Schug, A. C. Lilly and D. A. Lowitz, "Schottky Currents in Dielectric Films," Phys. Rev. B, 1, 4811 (1970).
20. A. C. Lilly, L. L. Stewart and R. M. Henderson, "Thermally Stimulated Currents in Mylar, High-Temperature Low-Field Case," J. of Appl. Phys., 41, 2007 (1970).
21. A. C. Lilly, R. M. Henderson and P. S. Sharp, "Thermally Stimulated Currents in Mylar, High-Field Low-Temperature Case," J. of Appl. Phys., 41, 2001 (1970).
22. A. C. Lilly, B. C. LaRoy and C. O. Tiller, "Transport Properties of  $\text{LaF}_3$  Thin Films," Talk Electrochemical Society (May, 1972).
23. A. C. Lilly, B. C. LaRoy and C. O. Tiller, "Transport Properties of  $\text{LaF}_3$  Thin Films," J. of the Electrochemical Society, 120, 1673 (1973).
24. B. C. LaRoy, A. C. Lilly and C. O. Tiller, "Thin-Film Solid State Reducible Gas Electrodes Using  $\text{LaF}_3$  Electrolyte," Talk Electrochemical Society (May, 1972).
25. B. C. LaRoy, A. C. Lilly and C. O. Tiller, "Thin-Film Solid State Reducible Gas Electrodes using  $\text{LaF}_3$  Electrolyte," J. of the Electrochemical Society, 120, 1668 (1973).
26. C. O. Tiller, A. C. Lilly and B. C. LaRoy, "Ionic Conduction in  $\text{LaF}_3$  Thin Films," Phys. Rev. B, 8, 4787 (1973).

27. A. C. Lilly, "Kinetics of Tobacco Decomposition," 2<sup>nd</sup> Philip Morris Science Symposium (1976).
28. A. C. Lilly, "Overview of P.M. Research Center, Industrial, Scientific and Medical Users of Microwaves," Co-Chairman- Laszlo and Lilly, (March, 1979).
29. A. C. Lilly, P. Martin and E. Stultz, "Lasers in the Tobacco Industry," 1981 CLEOS Meeting; Proceedings of Technical Program Electro-Optics/81 Conference, 139-146, (1981)
30. D. A. Lowitz, J. F. Whidby, A. C. Lilly and W. A. Farone, "Millimeter Wave Scattering Dielectric Spectroscopy," Talk at American Physical Society, (March, 1985).
31. J. C. Schug, R. D. Reid, A. C. Lilly and R. W. Dwyer, "UHF-RPA Calculations on Large Polyene Systems," Talk at American Physical Society, (March 1986).
32. J. C. Schug, R. D. Reid, A. C. Lilly and R. W. Dwyer, "UHF RPA Calculations on Large Model Polyene Systems," Chemical Physics Letters, 128, 1: 5-10; (July 11), 1986.
33. L. A. Burke, J. Kao, A. C. Lilly, "Combination of MOMM and VEH Methods to Calculate Electronic Properties of Polymers," J. Computational Chemistry, 8, 2, 107-116 (1987).
34. J. Kao and A. C. Lilly, "Theoretical Studies of Electronic Properties of Polyacene, Poly(1,4-Dihydrobenzo-1,4-Dihydrobenzene), Poly(P-Phenylenes), and Poly(P-1,4-Dihydrobenzenes) and their Hetero (N, O, and S) Substituted Derivatives, J. of the American Chemical Society, #109(14): 4149-4157; 1987.
35. R. D. Reid, J. C. Schug, A. C. Lilly and R. W. Dwyer, "UHF-RPA Investigation of Soliton-like Excitations in Transpolyacetylene," J. of Chemical Physics, #88(3): 2049-2056; 1988.
36. W. F. Kuhn, D. Leister, J. Kao and A. C. Lilly, "Comparison of Theoretical and Experimental Ionization Potentials of Nicotine and Related Molecules," J. of Molecular Structure, #212: 37-44; 1989.
37. A. C. Lilly, "Monte Carlo Simulation of Polyhydric Alcohol," Talk to American Physical Society (March 1989).
38. A. C. Lilly, "Monte Carlo Simulation of Aqueous Dilute Solutions of Polyhydric Alcohols," Dissertation, 1989.
39. A. C. Lilly, F. J. Beers and J. C. Schug, "NPT Ensemble Monte-Carlo Simulation of Ethanol in Water," J. of Molecular Structure (Theochem), #209: 69-75; 1990.
40. A. C. Lilly, S. C. Deevi, and Z. P. Gibbs, "Electrical Properties of Iron Aluminides," presented at the International Symposium On "Iron Aluminides: Alloy Design,

Processing, Properties, and Applications" 127<sup>th</sup> TMS Annual Meeting, San Antonio, Texas, February 16-19, 1998.

41. A. C. Lilly, S. C. Deevi, and Z. P. Gibbs, "Electrical Properties of Iron Aluminides," to be published in Materials Science and Engineering A (1998).

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42. A. C. Lilly, S. C. Deevi, V. K. Sikka, G. Fleischhauer, and S. Scorey, "Development and Production of FeAl-Based Intermetallic Alloys" presented at the 3<sup>rd</sup> International Workshop on "Ordered Intermetallic Alloys and Composites," April 4-10, 1998, Hangzhou, China.
43. Development And Production Of FeAl-Based Intermetallic Alloys By Deevi Sc; Hajaligol Mr; Lilly Ac; Fleischhauer Gs, Trans. Noferrous Met. Soc. China, Vol. 9, Supp. 1, 309-317, 1999.
44. Electronic Structure And Transport Properties Of Fe-Al Alloys By B. V. Reddy; S. C. Devi; A. C. Lilly; (P. Jena - Vcu, Richmond Va) Given At International Symposium On Cluster And Nanostructured Interfaces, October 25-28, 1999, Richmond Virginia.
45. Electronic Structure and Transport Properties of Fe-Al Alloys by (P. Jena & B. V. Reddy, Department of Physics, Virginia Commonwealth University;) S. C. Deevi,; A. Cliff Lilly - Given At Intermetallics For The Third Millennium, Materials Park, Ohio, November 1, 1999.
46. Binding Of Butadiene To Transition Metal Atoms And Dimers By Lilly Ac; (Rao Bk; Jena P - Virginia Commonwealth U) Given At The American Physical Society, Minneapolis, Mn, March 2000.

**Patents**

1. A. C. Lilly and C. J. Weismann, "Magnetic Field Free Ion Source with Adjustable Electron Gun," U.S. Patent #3182190 (1965).
2. A. C. Lilly and E. M. Gentry, "Electronic Thermometer," U.S. Patent #3548661 (1970).
3. A. C. Lilly and E. M. Gentry, "Method and Apparatus for Medical Diagnosis," U.S. Patent #3656474 (1972).
4. A. C. Lilly and C. O. Tiller, "Solid State Battery Having a Rare Earth Fluoride Electrolyte," U.S. Patent #3657016 (1972).
5. A. C. Lilly and C. O. Tiller, "Thin Film Reducible Gas Sensor," U.S. Patent #3719964 (1973).
6. A. C. Lilly and C. O. Tiller, "Oxygen-Responsive Electric Current Supply," U.S. Patent #3698995 (1972).
7. A. C. Lilly, F. Watson, P. Martin and J. Price, "Method and System for Detection of Thin Metal Layers in Packaged Articles," U.S. Patent #4166973 (1979).
8. A. C. Lilly, W. Claflin, W. Hardesty, H. Lanzillotti, "Method of Electrically Perforating a Planar Web," U.S. Patent #4207458 (1980).

9. A. C. Lilly, W. Claflin, W. Hardesty, H. Lanzillotti, "Apparatus for Electrical Perforation of Webs," U.S. Patent #4236062 (1980).
10. A. C. Lilly, P. Martin, E. Gröllmund, W. Duley, W. Claflin, "Method and Apparatus for Perforating Articles by Laser," U.S. Patent #4224497 (1980).
11. A. C. Lilly, P. Martin, E. Gröllmund, W. Duley, W. Claflin, "Apparatus for Perforating Articles by Laser," U.S. Patent #4224498 (1980).
12. H. V. Lanzillotti, G. H. Burnett, A. R. Wayte, T. S. Osdene, W. E. Claflin, A. C. Lilly, J. F. Nienow, "Method of Making Smoking Articles," U.S. Patent #4347855 (1982).
13. E. Cashwell, E. C. Gröllmund, W. W. Duley, A. C. Lilly, W. E. Claflin, E. B. Stultz, P. Martin, "Apparatus for Laser Perforation of Transported Articles," U.S. Patent #4349719 (1982).
14. G. H. Burnett, W. E. Claflin, H. V. Lanzillotti, A. C. Lilly, J. F. Nienow, T. S. Osdene, A. R. Wayte, "Smoking Article," U.S. Patent #4391285 (1983).
15. A. C. Lilly, W. E. Claflin, E. B. Stultz, U. A. Brooks, P. Martin, "Method and Apparatus for Perforation of Sheet Material by Laser," U.S. Patent #4410785 (1983).
16. A. C. Lilly, W. E. Claflin, E. B. Stultz, U. A. Brooks, P. Martin, "Method and System for Laser Perforation of Sheet Material," U.S. Patent #4439663.
17. J. L. Bonyasz, C. D. Owens, E. D. Mooz, A. C. Lilly, P. Martin, H. B. Merritt, B. A. Semp, "Process for Increasing the Filling Power of Tobacco," U.S. Patent #4497330 (1985).
18. E. B. Fischer, A. C. Lilly, "Expanded Wrapper and Smoking Articles Including Same," U.S. Patent #4574821 (1986).
19. A. C. Lilly, H. B. Merritt, C. D. Owens, "Process for Modifying the Smoke Flavor Characteristics of Tobacco," U.S. Patent #4607646.
20. A. C. Lilly, M. A. Serrano, K. S. Houghton, H. V. Laszillotti, E. B. Sanders, C. R. Hayward, J. R. Hearn, D. B. Losee, "Smoking Article," U.S. Patent #4966171 (1990).
21. A. C. Lilly, M. A. Serrano, K. S. Houghton, H. V. Lanzillotti, E. B. Sanders, C. R. Hayward, J. R. Hearn, D. B. Losee, "Smoking Article," U.S. Patent #4991606 (1991).
22. A. C. Lilly, A. G. Kallianox, J. F. Whidby, R. W. Dwyer, "Wrapper for Smoking Articles and Method for Preparing Same," U.S. Patent #4998542 (1991).
23. A. C. Lilly, W. A. Nystrom, L. C. Lanzell, H. V. Lanzillotti, C. R. Hayward, J. R. Hearn, "Carbon Heat Source," U.S. Patent #5076296 (1991).
24. A. C. Lilly, J. M. Ehrman, C. H. Goldsmith, E. C. Gröllmund, H. V. Lanzillotti, "Carbon Heat Smoking Article With Reusable Body," U.S. Patent #5240012 (1993).

- RECORDED**
25. A. C. Lilly, S. C. Deevi, S. Deevi, M. R. Hajaligol, H. V. Lanzillotti, D. B. Losee, M. L. Watkins, "Manufacturing of Composite Heat Sources Containing Carbon and Metal Species," U.S. Patent #5246018 (1993).
  26. A. C. Lilly, E. S. Gee, D. B. Losee, J. L. Myracle, C. H. Morgan, F. M. Sprinkel, F. V. Utsch, J. F. Whidby, "(Design) Electrical Cigarette," U.S. Patent #D346878 (1994).
  27. A. C. Lilly, E. S. Gee, D. B. Losee, J. L. Myracle, C. H. Morgan, F. M. Sprinkel, F. V. Utsch, J. F. Whidby, "(Design) Electrical Cigarette," U. S. Patent #D347490.
  28. A. C. Lilly, M. A. Serrano, K. S. Houghton, H. V. Lanzillotti, E. B. Sanders, C. R. Hayward, J. R. Hearn, D. B. Losee, G. S. Fleischhauer, W. G. Hough, "Smoking Article," U.S. Patent 5345951 (1994).
  29. Counts, M. E., Houck, W. G. Jr., Houghton, K. S., Lilly, A. C. Jr., Lipowicz, P. J., Myracle, J. L., Sprinkel, F. M., Washington, J. M., Wrenn, S. E., "Electrical Smoking Article Having Continuous Tobacco Flavor Web and Flavor Cassette Therefor," U.S. Patent 5479948 (1996).
  30. Deevi, S. C., Lilly, A. C. Jr., "Electrically Powered Ceramic Composite Heater," U.S. Patent 5498855 (1996).
  31. Sikka, V. K., Deevi, S. C., Fleischhauer, G. S., Hajaligol, M. R., A. C. Lilly, "Aluminum Containing Iron-Base Alloys Useful as Electrical Resistance Heating Elements," U.S. Patent 5595708 (1997).
  32. Collins, A. L., Counts, M. E., Das, A., Deevi, S. C., Fleischhauer, G. S., Higgins, C. T., Houck, W. G., Keen, B. J., Lee, R. E., Lilly, A. C., Losee, D. B., McCafferty, H. J., Morgan, C. H., Raymond, W. R., Ripley, R. L., Ritt, R. R., Scott, G. R., Sprinkel, F. M., Watkins, M. L., Wrenn, S. E., Utsch, F. V., "Flavor Generating Article and Method for Making Same," U.S. Patent 5613504 (1997).
  33. Sikka, V. K., Deevi, S. C., Fleischhauer, G. S., Hajaligol, Lilly, A. C., "Iron Aluminide Useful as Electrical Resistance Heating Elements," U. S. Patent 5620651 (1997).
  34. Hajaligol, M. R., Fleischhauer, G. S., Deevi, S. C., Higgins, C. T., Hayes, P. H., Herman, H., Ganzert, R. V., Collins, A. L., Keen, B. J., Laroy, B. C., Lilly, A. C., "Tubular Heater for Use In An Electrical Smoking Article," U. S. Patent 5665262 (1997).
  35. Collins, A. L., Counts, M. E., Das, A., Deevi, S. C., Lilly, A. C., Losee, D. B., Watkins, M. L., Utsch, F. V., "Heater Element of an Electrical Smoking Article and Method for Making Same," U. S. Patent #5730158 (3/24/98).
  36. Collins, A. L., Counts, M. E., Das, A., Deevi, S. C., Fleischhaue, G. S., Higgins, C. T., Houck, W. G., Keen, B. J., Lee, R. E., Lilly, A. C., Losee, D. B., McCafferty, H. J., Morgan, C. H., Raymond, W. R., Ripley, R. L., Ritt, R. R., Scott, G. R., Sprinkel, F. M., Watkins, M. L., Wrenn, S. E., Utsch, F. V., "Flavor Generating Article," U. S. Patent #5865185 (02/02/99).

37. Deevi, S. D., Lilly, A. C., "Functionally Stepped, Resistive Ceramic," U. S. Patent #5880439 (03/09/99).
38. Deevi, S. D., Hajaligol, M. R., Lilly, A. C., Sikka, V., "Iron Aluminide Useful as Electrical Resistance Heating Elements," U. S. Patent #5976458 (11/02/99).

Proprietary Information

#4



**HONORABLE  
PROJECT  
DEPARTMENT**

**Citations Of Authority Upon Which Expert Especially Relies**

DATE	DESCRIPTION	BATES NO.
09/15/1987	"Firm Says New Cigarette Doesn't Burn" Washington Post	
02/00/1998- 03/00/1998	Correspondence between Solana R. and Benowitz N., re: Beta biological testing information.	
02/00/1998- 03/00/1998	Correspondence between Solana R. and Cummings M., re: Beta biological testing information.	
02/00/1998 03/00/1998	Correspondence between Solana R and Wynder E.L., re: Beta biological testing information.	
10/30/1996	UTS	
00/00/1998	Beta kit, lighter, and cigarettes.	
03/18/1998	UTS	
00/00/1998	UTS	
00/00/1998	UTS	
02/15/1979	"Project Delta 1976-1978" (author unknown).	1000023494/3514
12/29/1976	06/00/1976 Summary Report, Project Delta, Charge No. 8212, Glebin, WE	1000023560/3564
10/00/1981	Project Delta	1003475929/5965
10/22/1981	Memo from Lanzillotti to Turano, "Project Delta."	1003475931/5941
07/29/1976	Memo from Seligman to McDowell, "Project Delta."	1003722317/2327
00/00/1990	Cigarette Cartridge Component Development Functions (confidential)	2020127559/7575
06/05/1990	Business Plan Project Beta	2020131866/1913
06/00/1989	Beta / Sigma Update 06/00/1989	2020132261/2272
09/17/1987	Short Term Research, Long Term Research, Delta 2 Strategies	2020132653/2657
07/09/1987	Presentation by C. Lilly (confidential)	2020153270/3287
00/00/0000	Presentation, "Project Beta."	2020156565/6576
00/00/1989	Sigma Article	2020156710
01/00/1989	Project Sigma	2020156792/6796
00/00/1988	Project Delta - Areas of Potential Product Advantage	2020157908/7911

DATE	DESCRIPTION	BATES NO.
01/21/1980	Memo from Lanzillotti H.T. to Osdene T.S., "Annual Accomplishments - 1979 - Project Delta."	2020276989/6990
01/15/1981	Memorandum from Lanzillotti to Gannon re: Annual Accomplishments, Project Delta 00/00/1980	202081197/1203
06/27/1990	BETA Board Speech ( <i>confidential</i> )	2021113612/3623
08/05/1992	Memo to Charles J. from Houghton K., "Termination of PMT Project"	2021313225/3226
03/00/1990	Preliminary Submission to Corporate Products Committee	2021502058/2060
11/11/1986	Project ART Alkaloid Reduced Tobacco	2021559550/9572
02/18/1988	Presentation on ART Pilot Plant	2021559793/9801
12/16/1981	Memorandum from Lanzillotti to Turano re: Plans And Objectives For 00/00/1982, Project Delta, Charge Number 8212; Lanzillotti, HV	2022161980/1984
09/00/1989	Report, "Project Number 1810: ART Process Development"	2022192683/2685
07/03/1986	Memorandum from E. Mooz and H. Nakatani to Dr. J. Whidby, "Nicotine and Polyamines in Tobacco: A Proposal" (July 3, 1986)	2022952463-2477
09/15/1989	Alix M. Freedman, "High Stakes for Low Nicotine," <u>Wall Street Journal</u>	2022967583
06/01/1989	Douglas C. McGill, "Low-Nicotine Cigarette for Philip Morris," <u>New York Times</u>	2022967586
09/01/1989	Alix M. Freedman, "Philip Morris Begins Testing 'Nicotine-Free' Cigarette," <u>Wall Street Journal</u>	2022967587
09/00/1987	Report, "Project Number 1704: Supercritical Fluid Processes"	2023077886/7887
05/00/1988	Report, "Project Number 1704: Supercritical Fluid Processes"	2023077894/7896
02/08/1989	ART Program Plan	2023106277/6286
12/20/1989	Report, "POL ART Extended Testing"	2023159978/60019
00/00/1992	1992-1996 Five Year Plan, Project Summary for ART De-Nic	2023316670
06/27/1990	Memo from Potter to Henriques, "Next De-Nic Market (6/15)"	2023348175/8177

DATE	DESCRIPTION	BATES NO.
11/16/1993	Presentation, "Alternative Smoking Devices and New Products"	2023637034/7082
05/03/1994	Beta Presentation	2023637034/7082
00/00/1993	Art Qualitative Research	2024068501/8510
10/31/1989	Letter from Lilly to Tasakorn, Chulalongkorn University, regarding supercritical carbon dioxide	2024272906
08/15/1990	Diagram of Promotional Mug for B&H De-Nic	2024750247
05/05/1991	Memo from Stem to Henriques, "B&H De-Nic Test Market Tracking -- Week 18 (Project Cost: \$181,600 to date)	2024750510/0522
00/00/1990	Memo regarding early test marketing	2024751323/1336
01/21/1991	Memo to Distribution from Potter, "B&H De-Nic Market Check (1/11)"	2024751366/1370
09/28/1979	Memo from Litsch to Burns, "Supercritical Co <sub>2</sub> Extraction of Nicotine"	2028669617/9619
02/01/1994	"In Vitro Cytotoxicity of Mainstream Smoke: Total Particulate Matter and/or Mainstream Smoke Gas/Vapor Phase of the Test Cigarette Ursus-59 and the Standard Reference Cigarette 1R4F	2028808643/8685
03/01/1995	"Mutagenicity of Total Particulate Matter of the Test Cigarettes Ursus-35 and Ursus-59 in the Salmonella Typhimurium Strains TA98 and TA100	2028808854/8903
01/24/1994	Chart entitled "Biological activity of mainstream smoke of <del>test</del> , premier and conventional cigarettes"	2029246398
05/11/1995	"Laboratory Inspection Report"	2029255034/5042
02/29/1988	Memo to <del>Lilly</del> , AC from Alonso, H Re: ART Program Operational Plan	2031437279/7286
11/13/1990	Memo from Henriques to Scully, "De-Nicotinized Tobacco"	2042135653/5654
11/03/1987	Memo from Resnik to Murray, "Supplemental Capital Appropriation Request: Alkaloid Reduced Tobacco (ART) Facility"	2043596102
12/02/1992	Memo from Henriques to Dangoor, "Benson & Hedges De-Nic Test Market - Arizona"	2044858204/8206
02/00/1988	Presentation, "Next/Merit Denic Consumer	2045738324/8334

DATE	DESCRIPTION	BATES NO.
	Research"	
00/00/1990	Advertisement from B&H De-Nic	2048312582
00/00/1991	Advertisement from B&H De-Nic	2048312584
01/00/1995	Presentation on Polymer Electrolyte, Lithium Ion, Nickel Metal Hydride, Nickel Cadmium Batteries	2050031986/1997
08/19/1994	Intermediate Report P 0500 / 3226 Mutagenicity of Total Particulate Matter of the Research Cigarettes 9295-S-1 and 9295-S-2 in the Salmonella Typhimurium Strains TA98 and TA100 (PT) (Cat D)	2050883307/3311
09/03/1994	INBIFO Research, "Intermediate Report P 0500/3234, Mutagenicity of Total Particulate Matter of the Research Cigarettes JA2-0, JA2-15, JA2-30, and JA2-40 in the Salmonella Typhimurium Strains TA98 and TA100 (PT)," Tewes, F	2050883519/3528
03/08/1995	Scientific Report, "Biological Activity of the Mainstream Smoke of the Test Cigarette URSUS-35 and the Standard Reference Cigarette 1R4F, 90-Day Inhalation Study on Rats (21-Day Results)," CRS	2050931675/1730
12/17/1994	INBIFO Scientific Report, "Report P 0500/3201 - Mainstream Smoke Analysis of the Test Cigarettes URSUS-35 and URSUS-59 - Part 1: Chemical Analysis, Metals," Dr. P. Voncken	2050933078/3098
00/00/1992	Consumer and Sensory Research of De-Nic	2051001043/1047
01/17/1996	Interoffice correspondence from M. Shulleeta to Dr. R. Kinser re status of studies on low alkaloid transgenic tobacco	2051187522-7528
08/25/1988	Memo from Prasad to Knudson, Bermuda Hundred Pilot Plant (Project ART)	2051841167/1168
07/26/1988	Memo from Prasad to Knudson, "Bermuda Hundred Pilot Plant (Project ART)	2051841186/1188
00/00/1987	Report by Banyasz, et al., "Alkaloid Reduced Tobacco (ART) Program, Current Status and Plans for 1987."	2051841630/1644
12/22/1987	Memo from Bates to Spielberg and Willis, "OC Walk-In Test of Pilot Plant ART AB, Pilot Plant ART AB with Nicotine Added Back, and an Unextracted Control"	2057044472/4475

DATE	DESCRIPTION	BATES NO.
10/16/1986	Memo from Bates to Cliflin and Mulherin, "Subjective Internal Testing of ART Project Flavor Low and Full Flavor Models"	2057044558/4564
10/26/1987	"Subjective Ratings of Project ART Samples"	2057104044/4047
01/16/1987	"Project Release" for ART Pilot Plant	2057701571/1572
11/20/1986	Memo from Berenson D. to Horace, attaching memo from Pastorius J.G. to Turano L.R., re: appropriation request for ART pilot plant	2057701573/1580
04/14/1994	Project Beta ( <i>confidential</i> )	2058188292/8307
12/13/1994	Letter from Houghton, K to Gardner, S re: Gardner's agreement to serve on Scientific Advisory Board and role of SAB ( <i>never designated</i> )	2059767300/7301
09/08/1997	Project Beta Budget (1990-1997)	2059767541
03/02/1998	Equi-Effect Design for Subchronic Inhalation Toxicity Studies Comparing Conventional and Novel Cigarettes	2062857530
03/02/1998	Evaluation of an Electrically Heated Cigarette	2062857531
03/02/1998	Discrimination of Cigarette Mainstream Smoke with the Neutral Red Uptake Cytotoxicity Assay	2062857532
03/02/1998	Discrimination of Cigarette Mainstream Smoke Condensates with the Salmonella Reverse Mutation Assay	2062857533
03/02/1998	The Toxicologist, An Official Publication of the Society of Toxicology and Abstract Issues of Toxicological Sciences Abstracts of the 37th annual meeting March 1998	2062857534/7537

PRODUCTION

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Dr. Watson

PHILIP MORRIS INCORPORATED  
INTER-OFFICE CORRESPONDENCE  
RICHMOND, VIRGINIA

To: RADOC  
From: A. Bayley  
Subject:

Date: July 20, 1962

A MEDICALLY ACCEPTED CIGARETTE

Tobacco smoke contains a number of substances alleged to be detrimental to the health of smokers and I shall list only a few:

I. Primary Carcinogens:

Compound	Conc. ug./100 Cigts.
Benzo (a) pyrene	0.50
Benzo (e) pyrene	0.30
Dibenz (a, j) acridine	0.27
7H-Dibenzo (c,g) carbazole	0.07
Chrysene	0.06
Dibenzo (a, h) authraene	0.05
Dibenzo (a, h) acridine	0.01

Plus traces of other polynuclear carcinogenic hydrocarbons.

II. Other Primary Carcinogens:

Arsenous oxide  
B-naphthol, etc.

III. Co-carcinogens:

Compound	Conc. ug./100 Cigts.
Pyrene	5.0
Fluoranthrene	1.0
Methylpyrene	5.0
Other Polynuclear Hydrocarbons	

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Produced by R.R.T.C

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IV. Irritants - produce a precancerous state or potentiate carcinogenic components

e.g. Phenolics {Phenol, c, m, and p cresol}

Acrolein, etc.

Oxides of nitrogen, etc.

V. Gaseous poisons:

e.g. CO, etc.

VI. Alkaloids - Primarily Nicotine:

A medically acceptable cigarette would obviously be one whose smoke contained little or none of the above substances in mainstream smoke.

A filter which selectively removed all or even some of the above materials would be favorably received by the medical profession. Before work on selective filtration could be carried out, analytical methods for determining either individual components or classes of components of these chemicals would have to be devised.

The addition of chemicals to the tobacco which would modify the pyrolysis in a way which would produce less of these allegedly harmful substances would have to be studied. Catalysis and other means of modifying the combustion of the tobacco would be studied. The relationship of the temperature profile of the burning tobacco with smoke composition would have to be studied in order to minimize the production of these alleged harmful substances by changing this profile. "

In brief, research is needed in the following areas in order to produce a medically acceptable cigarette:

1. Analytical methods must be devised for the rapid determination of classes of the allegedly harmful substances.
2. Materials must be studied for use in filters which would selectively remove these allegedly harmful substances.
3. Research on the use of chemical additives for reduction of these presumed noxious substances is necessary.

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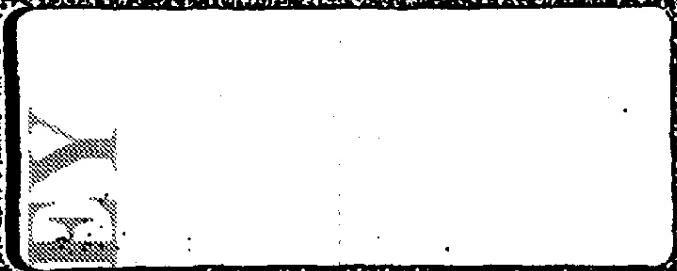
Proposed by R.R.T.C

4. Studies relating the temperature profile of burning tobacco and smoke composition should be carried out. Modifications of the profile may lead to a reduction of the substances in question.
5. The addition of so-called anti-carcinogenic compounds to tobacco and a study of the effect this would have in smoke condensate skin painting tests.
6. A search for materials other than tobacco which can be used after modification as the combustible substance providing the "consumer satisfying" smoke.
7. Mechanical Devices - e.g. aerosols with consumer appeal.
8. The search of tobacco strains which produce fewer of the listed substances in smoke.
9. A search for the major precursors of some of the alleged harmful substances. Removal of the precursors by chemical processing.
10. Removal of any harmful ingredients present in tobacco which are volatilized during smoking - e.g. nicotine.

AB:mro  
cc: Dr. E. Wakeham  
Dr. [REDACTED] Mace, Jr.  
Dr. W. L. Dunn  
Dr. [REDACTED] Seligman  
Mr. H. J. Dooley

*A. Barley*

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PHILIP MORRIS INCORPORATED

TOBACCO AND HEALTH-R&D APPROACH

Presentation to R & D Committee

by Dr. H. Wakeham

at meeting held in New York Office

on

November 15, 1961

Philip Morris  
Produced by R&D Dept

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## TOBACCO AND HEALTH - R & D APPROACH

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MAJOR CONSTITUENTS  
OF MAINSTREAM PARTICULATE PHASE

ACIDS

Acetic	0.8 mg.
Lactic	0.3
Succinic	0.2
Propionic	0.2
Formic	0.1
Butyric	0.1
2-Aminobutyric	0.1
Glutamic	0.1
Malonic	0.1
Malic	0.05
Oxalic	0.05
Valeric	0.05

BASES

Nicotine	1-2 mg.
Anabasine	Trace
Nornicotine	"
Myosmine	"
Nicotyrine	"
Nornicotyrine	"
Anatabine	"

CARBON COMPOUNDS

Biacetyl (butanedione)	0.2 mg.
Butyraldehyde	0.3
Diethyl ketone	0.2
Glyoxal	0.2
Furfural	0.1
Hydroxy methyl furfural	-
Methyl furfural	-
Pyridyl ketones	-

HYDROCARBONS

Paraffin Waxes	0.3 mg.
Neophytadrene	0.2
Toluene	0.1
Dipentene (d-limonene)	0.1
Xylenes	Trace
Ethyl toluenes	-
Naphthalene	-
Anthracene	-

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**FLAVOR AND IRRITATION STUDIES**

**Independent Evaluations  
at Cigarette Smoke Concentrations**

	<u>Flavor Intensity</u> <u>0 - 10</u>	<u>Irritation Intensity</u> <u>0 - 10</u>
Acrolein	3.7	4.1
Acetone	2.0	0.7
Diacetyl	5.2	2.4
Diethyl Ketone	4.7	1.7
Furan	6.0	0.9
Isoprene	4.7	1.8
Methanol	0.8	0.5
Methyl Acetate	1.1	0.2
Propyne (acetylene)	5.1	3.5

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## THE CANCER CONTROVERSY

### Some Definitions

- CARCINOMA** - a malignant growth arising from epithelial tissue (skin, gastric or intestinal mucosa, lungs, etc.)
- SARCOMA** - a malignant growth arising from connective or muscle tissues (muscles, blood vessels, cartilage, bone, lymph, etc.)
- CARCINOGEN** - a substance which applied to the tissue of a test animal gives rise to tumor formation. In tests for carcinogens it is assumed that tumors ultimately lead to cancerous growths and that a carcinogen so demonstrated in test animals is dangerous to man.
- TUMOR PROMOTER** - a substance which by itself does not show carcinogenic activity but which applied before or concurrently with a carcinogen enhances the effect of the latter.
- ANTICARCINOGEN** - a substance which inhibits the normal activity of a carcinogen in a test animal.

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## EVIDENCE LINKING CANCER AND TOBACCO

Based on two main points

1. Statistical evidence that certain diseases are more prevalent among smokers than non-smokers.

Lung cancer  
Bladder cancer  
Cardiovascular diseases

These associations suggest that smoking may be a causative factor.

Physiological tests in which animals treated with smoke condensates, extracts, or compounds therefrom, suffer from increased tumor frequency. Most tests involve skin painting or injections on special strains of mice. Smoke inhalation experiments have failed to produce lung cancer.

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### THE PROBLEM OF CARCINOGEN IDENTIFICATION

1. Many factors need to be considered in studying carcinogenesis.  
J. P. Greenstein, Biochemistry of Cancer - "The carcinogenic potency of an agent does not reside in the nature of the agent alone but is a function of the following factors:
  - (a) The dosage, the nature of the vehicle, the mode and length of time of administration of the agent;
  - (b) The strain, the species, the sex, and the age of the test animals;
  - (c) The site of application, the presence of concomitant factors such as the level of essential dietary constituents and the number of animals kept in a cage."
2. One in five of all randomly performed chronic toxicity tests reveals the presence of a carcinogen.

Hartwell, Survey of Compounds Which Have Been Tested for Carcinogenic Activity, U. S. Public Health Service - About one-half (50) of the new carcinogens belongs to five chemical classes as follows:

<u>Class</u>	<u>New Compounds</u>	<u>Carcinogens</u>
Aliphatic Carbamates	16	15
Tricyclic Aminofluorenes	14	12
Tetracyclic Cyclopentenophenanthrenes	14	6
Azo compounds	88	36
Heterocyclic Benzacridine	22	14
	154	83

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RELATIVE POTENCY OF CARCINOGENS TO THE SKIN OF MICE;  
COMPARISON OF DIFFERENT SYSTEMS OF GRADING

<u>COMPOUNDS</u>	<u>PER CENT LATENT TUMORS</u>	<u>IBALL'S PERIOD</u>	<u>BLUM'S INDEX</u>	<u>GRADE</u>	<u>BADGER</u>
		(days)			
9,10 - dimethyl - 1,2 - benzanthracene	65	43	151	X	++++
20 - methyl - chrysanthrene	88.5	109	80	VIII	+++
3,4-benzpyrene	89.5	119	76	VIII	+++
2-methyl-1,2-benzanthracene	75	155	48	VII	+++
10-methyl-1,2-benzanthracene	88.5	147	45	VI (?)	+++
6-methyl-1,2-benzanthracene	87.5	317	28	V	++
1,2,5,6-dibenzanthracene	63	239	26	VI	++
3,4-benzphenanthrene	67	387	17	V	+

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PARTIAL LIST OF COMPOUNDS IN CIGARETTE SMOKE  
ALSO IDENTIFIED AS CARCINOGENS

Arsenic	Dibenzo(a, h)acridine +
Benz(a)pyrene +++	Dibenzo(a, h)pyrene ++
Benz(e)pyrene +	9,10-Dimethylbenzo(a)anthracene +++
Benz(c)pyrene +	Diethylene glycol
Benz(b)anthracene +	2-Dimethylchrysene
Benzofluoranthene +	Dibenzo(a, l)pyrene
Benz(b)fluoranthene ++	Dibenzo(a, l)pyrene
Benzene	Ethyl alcohol
p-Benzoquinone	Fructose
n-Butyric acid	Glucose
Benz(a, h, l)perylene +	Lactic acid
Chrysene +	3-Methyl-1, 2-benzanthracene +
Chromium	2-Methyl-3, 4-benzphenanthrene
Cobalt	Nickel
5, 6-cyclopenteno- 1, 2-benzanthracene	2-Naphthol
6, 7-cyclopenteno- 1, 2-benzanthracene	Oleic acid
Dibenzo(a, h)anthracene ++	l-Proline
Dibenzo(a, h)acridine ++	Pyrrole
7H-Dibenzo(c, g)carbazole ++	Xylene
	Indeno [1, 2, 3-cd]pyrene
	3-Methylpyrene

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## CANCER PROMOTING AGENTS IN CIGARETTE SMOKE

Roe, Salaman, and Cohen, British Journal of Cancer, 1969

"Present evidence suggests that smoking has stronger tumor-promoting than tumor-initiating effect. Strong tumor-promoting effect by a phenolic fraction of cigarette smoke condensate applied after a single tumor-initiating dose of 9,10-dimethyl-1,2-benzanthracene (DMBA) to the dorsal skin of "10B" strain mice was observed: 65 benign and two malignant tumors arose on 30 mice during 40 weeks of treatment. The same dose of DMBA alone produced a negligible number of tumors, and the phenolic fraction alone produced none."

## SOME PROMOTING AGENTS

- \* Phenols
- \* Liquid paraffin hydrocarbons
- Organic acid esters
- Fats
- Oleates
- Cholesterol
- Benzene
- Iodoacetic acid
- Chloracetophenone
- Prolavine
- Ethanolamine
- Turpentine

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PHENOLS IN CIGARETTE SMOKE

UG/CICT.

Phenol	128
p-Dihydroxybenzene	83
p-Cresol	40
Catechol	30
O-Quinacol	28
m-Cresol	22
$\alpha$ -Tocopherol	20
m-Cresol	18
Resacetoin	8
2-Naphthol	0.6
1-Naphthol	0.3
Dihydroxybenzopyrene	-
3,7-Dimethylquercetin	-
m-Hydroxyacetophenone	-
p-Hydroxyacetophenone	-
2,4,6-Trimethylphenol	-
3-Methylquercetin	-
Scopoletin	-
Tetrahydro-2-naphthol	-
2,4-Dimethylphenol	-
3,5-Dimethylphenol	-
Cinnic acid	-
Quercetin	-

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ANTI-CARCINOGENS

Phospholipid fractions

Bromobenzenes

Malic acid      ) Other unsaturated  
Citraconic acid    ) dibasic acids

Heptaldehyde

\*Naphthalene

\*Anthracene

\*Phenanthrene

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## SMOKING AND CARDIOVASCULAR DISEASES

BELIEF - Cardiovascular ailments which may arise from smoking are due to the physiological effects of nicotine.

- (1) Effects on the nervous system giving rise to both stimulating and/or depressant symptoms on various body functions.
- (2) Specific effects on the adrenal medulla, causing it to discharge epinephrine, a hormone which accelerates the heartbeat, contracts the peripheral blood vessels, and raises the blood pressure.

It is difficult to separate these effects from those due to normal pressures of modern living.

### Other complications:

- (a) Low nicotine doses stimulate, but high doses depress functions.
  - (b) Continued usage develops tolerance.
  - (c) People vary greatly in their response to nicotine.
- In contrast to these effects, it is also recognized that smoking produces pleasurable reactions or tranquility, and that this is due in part to nicotine, and not entirely to the physical manipulations involved in smoking.

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R & D PROGRAM LEADING TO A MEDICALLY ACCEPTABLE CIGARETTE

Present knowledge and current research indicate three main approaches:

I. Reduction of Irritating Factors in Smoke.

This involves extension of current work in tobacco chemistry, flavor and irritation studies, and selective gas phase filtration. Cost guesstimate: \$3,000,000.

II. Controlled Nicotine in Filler and Smoke.

This program is partially complete and could be finished in 18-24 months. Cost guesstimate (to small pilot plant stage): \$1,000,000.

III. Reduction of the General Level of Carcinogenic Substances in Smoke (but without Complete Elimination of More than a Few Specific Compounds.)

Cost and time guesstimate: \$10,000,000 and 7 to 10 years.

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## L. REDUCTION OF IRRITATING FACTORS IN SMOKE

A. This approach is based on the hypothesis that physiological irritations are a first step in the initiation of more serious ailments.

### B. Plan.

1. Development of objective test for irritation.
2. Identification of irritating constituents.
3. Selective elimination of irritants from smoke.

4. By selective filtration of gas phase.
5. By modification of cigarette chemistry through

- (1) Additives to control pyrolysis reactions
- (2) Selection of filler blends

C. This program is closely related to flavor improvement and increased consumer acceptability; hence it has a double advantage to product enhancement.

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## II. CONTROLLED NICOTINE IN FILLER AND SMOKE

Even though nicotine is believed essential to cigarette acceptability, a reduction in level may be desirable for medical reasons.

### Problems:

1. How much nicotine reduction will be acceptable to the smoker?
2. What taste difference will be tolerated?
3. Is it better to extract burley, bright, or both for low nicotine product of maximum consumer acceptability?

Consumer tests are under way to answer these questions.

Two processes available for flavorful, low nicotine tobacco:

1. The Rosenthal process--now being negotiated.
2. The MEK extraction process--it is planned to design a small pilot plant, applicable to either burley or bright:
  - (a) To provide engineering process data useful for upscaling if desired.
  - (b) To serve as a standby unit suitable for production of a minor brand which could be introduced in response to public demand.

The use of low-nicotine tobaccos will also be considered.

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### III. REDUCTION OF CARCINOGENS IN SMOKE

To achieve this objective will require a major research effort, because

1. Carcinogens are found in practically every class of compounds in smoke.

This fact prohibits complete solution of the problem by eliminating one or two classes of compounds.

The best we can hope for is to reduce a particularly bad class, i.e., the polynuclear hydrocarbons, or phenols.

Present technology does not permit selective filtration of particulate smoke.

Flavor substances and carcinogenic substances come from the same classes, in many instances.

4. Many pyrolysis products have multiple precursors in tobacco.

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THE PRODUCTION OF POLYCYCLIC HYDROCARBONS FROM TOBACCO  
VS. CIGARETTE PAPER

<u>COMPOUND</u>	<u>AMOUNT FROM TOBACCO</u>	<u>AMOUNT FROM PAPER</u>
Acenaphthylene	20.5*	1.41*
Anthracene	48.0	0.74
Pyrene	55.0	2.92
3, 4-Benzpyrene	4.0	0.59
1, 12-Benzpyrene	0.5	0.38
Phenanthrene	--	2.92
Fluoranthene	--	2.92

\* Values are in  $\mu\text{g}/500$  cigarettes

CONCLUSION: Tobacco is the main source of polynuclear hydrocarbons in cigarette smoke.

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POLYCYCLIC HYDROCARBONS COME FROM  
MANY TOBACCO CONSTITUENTS

µg/100 grams burned at 650°C

Per cent in tobacco	Cellulose	Lignin	Pectin	Starch	Glucose	Malic Acid
	9.0	3.5	10.7	4.0	11.0	10.1
Acenaphthylene	160	80	20	56	27	16
Fluorene	584	8000	287	32	7	632
Anthracene	337	544	539	104	38	70
Pyrene	219	33	133	35	86	166
Fluoranthene	164	58	152	94	45	138
3-Methylpyrene	131	-	29	11	1	119
1:2-Benzanthracene	186	44	273	116	43	130
1:2-Benzpyrene	65	22	34	4	11	8
3:4-Benzpyrene	78	47	45	17	29	35

CONCLUSIONS: Removal of any single precursor will not eliminate polycyclic hydrocarbons from smoke.

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SOME POSSIBLE WAYS TO REDUCE  
CARCINOGENS IN TOBACCO SMOKE

1. Discover major precursors for carcinogens and/or cancer promoters.
2. Discover mechanism or conditions by which carcinogens are produced and modify those conditions.
3. Select experimental tobaccos which produce a minimum of carcinogens.
4. Add anticarcinogens.
5. Discover differences in particulate fractions which will permit separation of carcinogens in smoke.

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